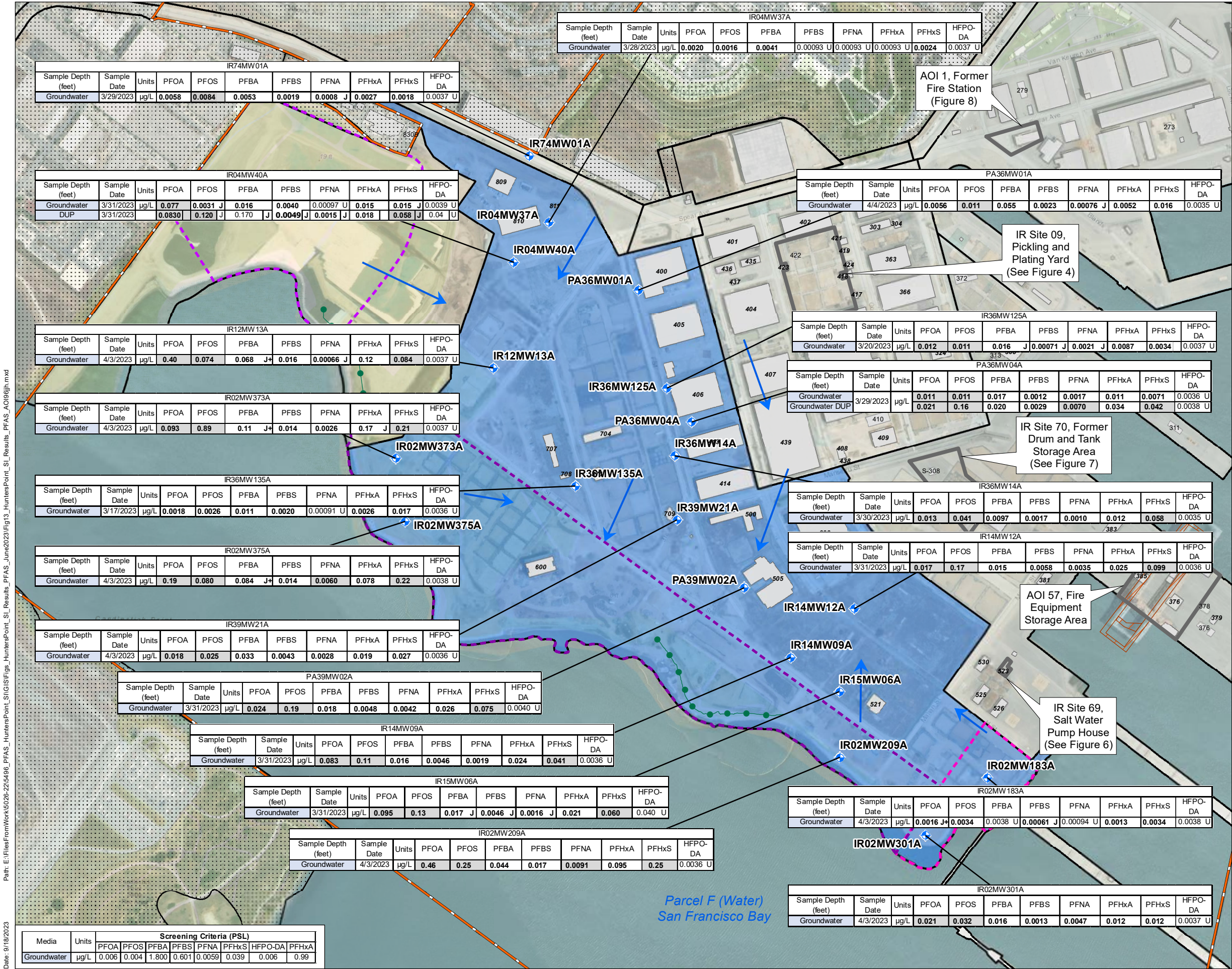


Path: E:\FilesFromWork\5026-22\5496_PFAAS_HuntersPoint_SiG\GIS\Figs_HuntersPoint_Si_Results_PFAAS_AOI96\jrh.mxd

Date: 9/18/2023



Not to Scale

Detail

Area Location Map

Legend

- Existing Monitoring Well Sampled for PFAS
- PFAS AOI 96, Parcel E "A" Zone Groundwater
- Approximate Groundwater Flow Direction
- Sheetpile wall
- Potential PFAS Source Area AOIs
- Parcel Boundary
- Buildings
- Gantry Crane
- Non-Navy Property
- Bay Fill Area Based on WESTEC Initial Assessment Report
- Burning Disposal Site at IR Site 02
- Industrial Landfill Areas
- Former HPNS Boundary

Notes:

Groundwater results reported in µg/L
Bold = analyte detected in sample above the detection limit
Shaded results exceed the screening criteria (PSL)

µg/L = micrograms per liter
AOI = Area of Interest
HFPO-DA = hexafluoropropylene oxide dimer acid
HPNS = Hunters Point Naval Shipyard
IR = Installation Restoration
J = estimated value
J = estimated value, bias high
PFAS = Per- and Polyfluoroalkyl Substances
PFBA = perfluorobutanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxA = perfluorohexanoic acid
PFHxS = perfluorohexanesulfonic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonic acid
PFNA = perfluorononanoic acid
PSL = Project Screening Level
U = not detected at or above the detection limit

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2023

0 250 500 1,000
Feet
1 Inch = 500 Feet

Site Inspection for Basewide Investigation of PFAS
Former HPNS, San Francisco, California

**Groundwater Sampling Locations and Results
AOI 96,
Parcel E, "A" Zone Groundwater**

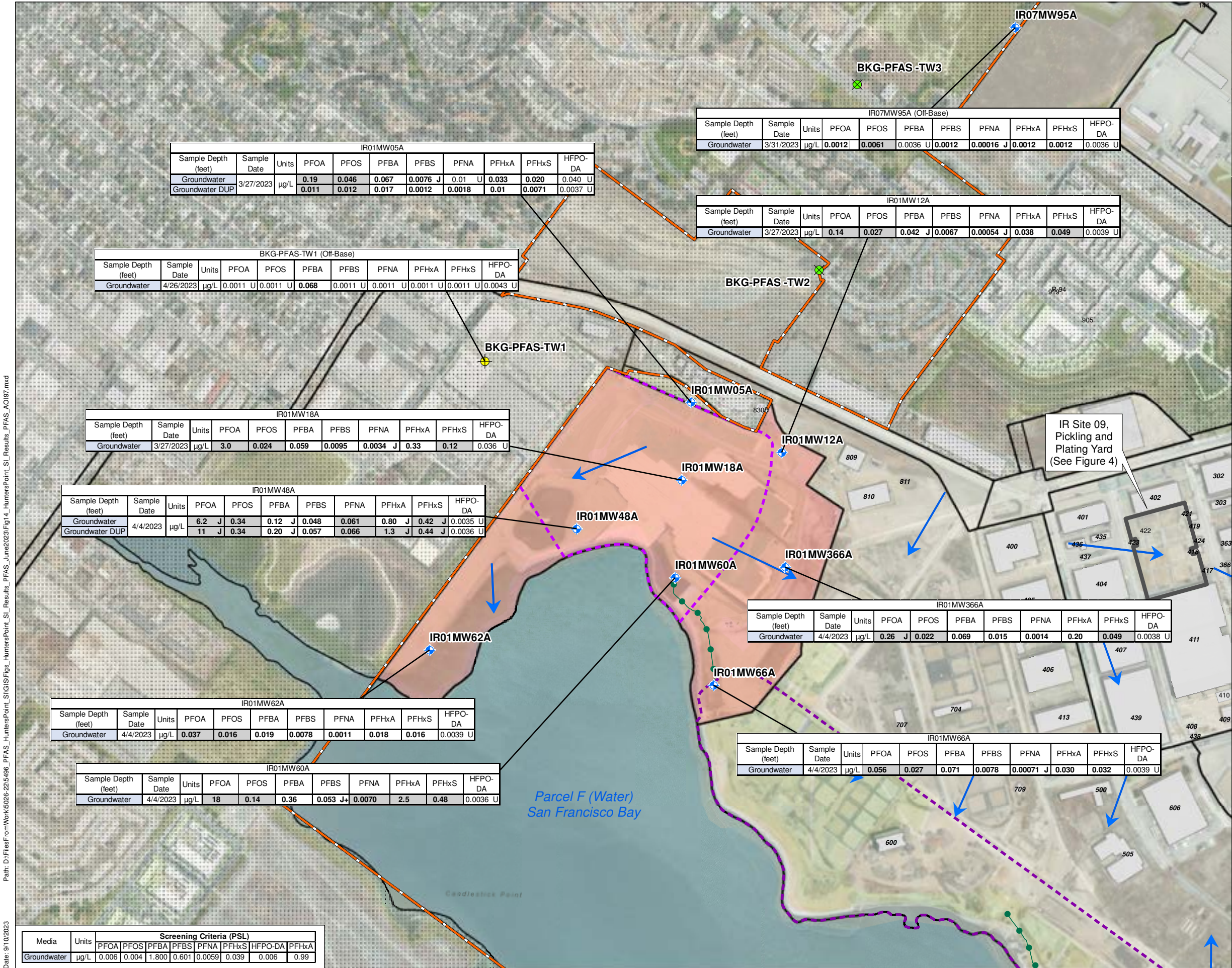
PROJECT NO.:	5026-25-5496
DATE:	September 2023
DRAWN BY:	KOB
CHECKED BY:	TG

FIGURE 13

This page intentionally left blank.

Path: D:\FilesFromWork\5026-22\5496 PFAS HuntersPoint_Si\GIS\Figs_HuntersPoint_SI_Results_PFA5_AQ197.mxd

Date: 9/10/2023



Not to Scale

Detail

Area Location Map

Legend

- Existing Monitoring Well Sampled for PFAS
- Temporary Monitoring Well Sampled for PFAS
- Temporary Off-Base Well met auger refusal and was not installed
- PFAS AOI 97, Parcel E-2 "A" Zone Groundwater
- Approximate Groundwater Flow Direction
- Sheetpile wall
- Potential PFAS Source Area AOIs
- Parcel Boundary
- Buildings
- Non-Navy Property
- Bay Fill Area Based on WESTEC Initial Assessment
- Industrial Landfill Areas
- Former HPNS Boundary

Notes:

Groundwater results reported in µg/L
Bold = analyte detected in sample above the detection limit
Shaded results exceed the screening criteria (PSL)

µg/L = micrograms per liter
AOI = Area of Interest
HFPO-DA = hexafluoropropylene oxide dimer acid
HPNS = Hunters Point Naval Shipyard
IR = Installation Restoration
J = estimated value
J+ = estimated value, bias high
PFAS = Per- and Polyfluoroalkyl Substances
PFBA = perfluorobutanoic acid
PFBS = perfluorobutanesulfonic acid
PFHxA = perfluorohexanoic acid
PFHxS = perfluorohexanesulfonic acid
PFOA = perfluorooctanoic acid
PFOS = perfluorooctane sulfonic acid
PFNA = perfluorononanoic acid
PSL = Project Screening Level
U = not detected at or above the detection limit

Basemap Source/Aerial Photo: ESRI ArcGIS online service 2023

0 250 500 1,000
Feet
1 Inch = 500 Feet

Site Inspection for Basewide Investigation of PFAS
Former HPNS, San Francisco, California

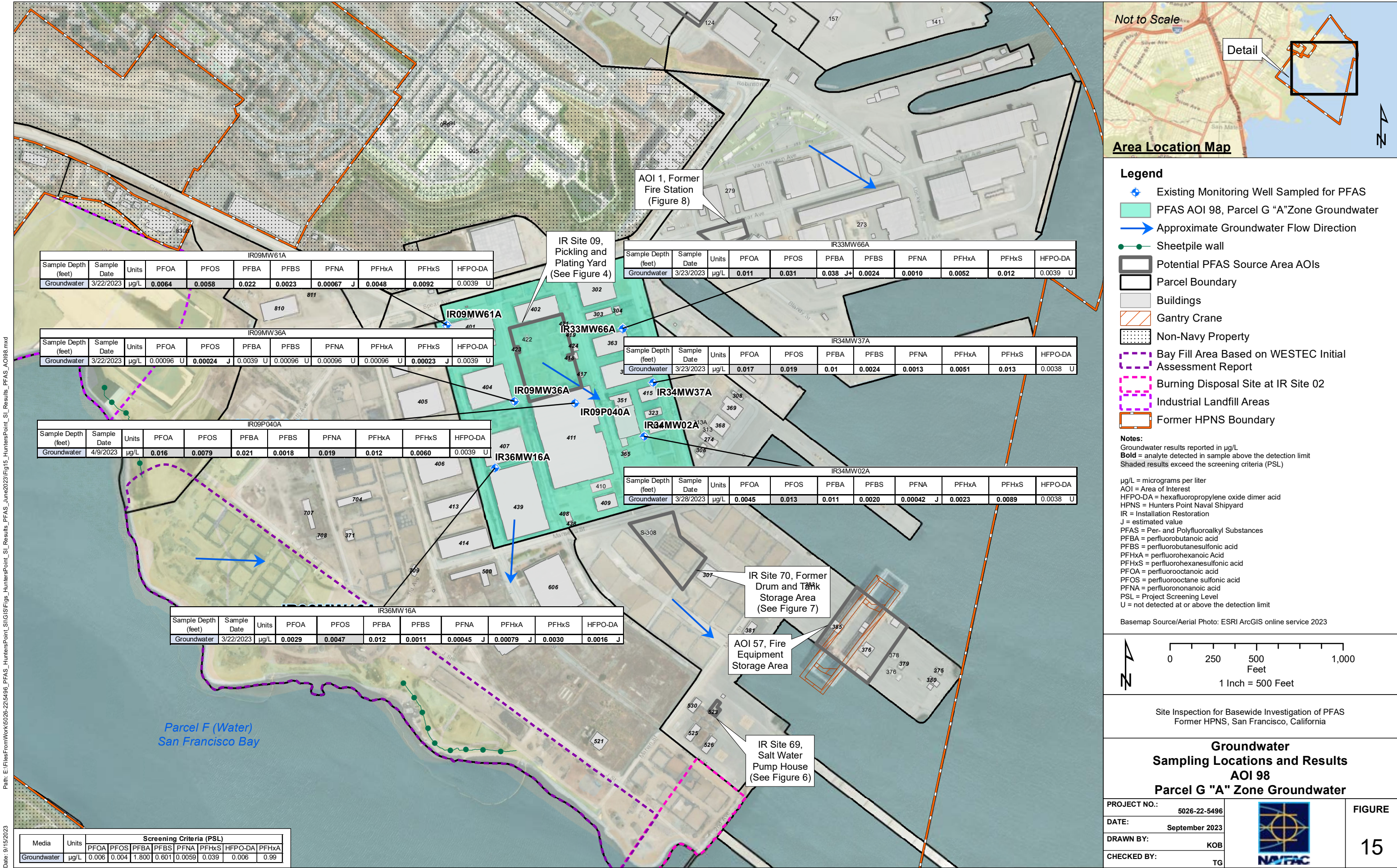
**Groundwater
Sampling Locations and Results
AOI 97 and Off-Base Locations
Parcel E-2 "A" Zone Groundwater**

PROJECT NO.:	5026-22-5496
DATE:	September 2023
DRAWN BY:	KOB
CHECKED BY:	TG

FIGURE

14

This page intentionally left blank.



This page intentionally left blank.

Appendix H

Parcel E-2 Landfill Extraction Well Letter and Landfill Gas Monitoring Probe Technical Memorandum (DCNs: ERRG-6011-0000-0036; GESL-0005-5163-0022)

This page intentionally left blank.



DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
33000 NIXIE WAY, BLDG 50 Suite 207
SAN DIEGO, CA 92147

5000-33B
Ser BPMOW.rd/031
February 9, 2024

Mr. David Tanouye
San Francisco Bay Regional
Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Ms. Karen Ueno
United States Environmental
Protection Agency Region 9
75 Hawthorne St
San Francisco, CA 94105

Dear Mr. Tanouye and Ms.Ueno

The enclosed technical memorandum provides our technical rationale for the installation of an extraction well (EX-11) as the next step in implementing a solution for addressing the methane levels associated with GMP-07A. To continue forward progress, it is tentatively planned to install the extraction well the week of February 22, 2024 weather permitting.

We look forward to discussing and resolving the methane issue with the regulatory agencies as this is a vital step in implementing a permanent solution. Please contact Andre Baker at (619) 524-5167 if you have any questions.

Sincerely,

M. POUND
BRAC Environmental Coordinator
By direction of the Director

Enclosure: Technical Memorandum: Technical Rationale for the Installation of a
New Extraction Well on Parcel E-2 Landfill Geomembrane date February
9, 2024

Copy to: (Next page)

5000-33B
Ser BPMOW.rd/031
February 9 , 2024

Copy Via Email:

Mr. Andrew Bain, United States Environmental Protection Agency

Andrew.Bain@epa.gov

Mr. Michael Howley, California Department of Toxic Substances Control,

Michael.howley@dtsc.ca.gov

Mr. Ryan Casey, City of San Francisco Department of Public Health,

Ryan.casey@sfdph.org

Ms. Lila Hussain, Office of Community Investment and infrastructure

Lila.hussain@sfgov.org

Technical Memorandum

From: Andre Baker, Remedial Project Manager

Via: Michael Pound, BRAC Environmental Coordinator

To: BCT Members

Date: February 9, 2024

SUBJECT: Technical Rationale for the Installation of a New Extraction Well on Parcel E-2 Landfill Geomembrane

The Department of the Navy is providing a technical rationale for the installation of an extraction well (EX-11) as a step forward to resolve the methane levels found at GMP-07A.

The extraction well will be installed on the week of February 22, 2024, on the Parcel E-2 Landfill within the geomembrane boundary, approximately 20 feet from GMP-07A (Attachment 1). The installation of this extraction well is in response to the methane levels at GMP-07A and will be incorporated into the long-term methane control solution portion of the approved remedy. The Navy will continue to work with the regulatory agencies to develop and implement a long-term strategy for the methane levels at GMP-07A.

OBJECTIVE

- Installation of EX-11 in the area of GMP-07A will allow the mobile extraction unit to be attached and lower the methane concentrations in that area to protect human health and the environment, in accordance with the Final Interim Monitoring and Control Plan Section 2.2.2 Gas extraction Units and Treatment System (Attachment 2).

RATIONALE FOR LOCATION

- EX-11 will be installed approximately 20 feet away from GMP07A to prevent damage to GMP07A during installation and placed in similar elevation, lithology, depth to GMP-07A (Attachment 1 and 3).
- The radius of influence is assumed to be approximately 100 to 150 feet based on the Final Remedial Design section 3.8.3.1 LFG Extraction Well Radius of Influence (Attachment 4).

RATIONALE FOR EXTRACTION WELL DESIGN

- The extraction well will follow the design requirements for the extraction well as outlined in the Remedial Design section 3.8.3.2 LFG Extraction Wells Construction (Attachment 5 and Attachment 6). "Vertical extraction wells will be constructed of Schedule 80 PVC pipe casings, 4 inches in diameter. The lower section of the well casing will be perforated with 0.5-inch round holes to allow LFG to be extracted from the waste. The perforated length of pipe will typically be from 1/2 to 3/4 of the overall casing length (5 to 25 feet), depending on the depth of the well bore to groundwater and the thickness of waste encountered. The remaining length of the well casing will be constructed of non-perforated pipe to reduce the potential for intrusion of air into the waste and the well. The well casings will be installed in borings ranging from 18 to 24 inches in diameter and backfilled with coarse gravel around the perforated section of pipe and a bentonite seal around the solid section of pipe".

Attachments

1. Figure 13 - Final Cover System with GMP and Extraction Well Location (Final Remedial Design ERRG 2014)
2. Excerpt from Parcel E-2 Design Basis Report section 3.8.3.2 LFG Extraction Wells construction pages 62 (Final Design Basis Report, ERRG 2014)
3. GMP-07A Boring Log (Final Interim Landfill Gas Monitoring and Control Plan Tetra Tech 2004)
4. Excerpt from Parcel E-2 Design Basis Report section 3.8.3.1 LFG Extraction Well Radius of Influence pages 60-61 (Final Design Basis Report, ERRG 2014)
5. Figure C-31 Details Extraction Well Details (Final Design Basis Report ERRG 2014)
6. Excerpt from Parcel E-2 Final Interim Landfill Gas Monitoring and Control Plan section 2.2.2 Gas extraction Units and Treatment System Pages A-6 – A-7 (Final Interim MCP, Tetra Tech 2004)

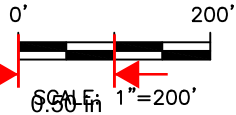
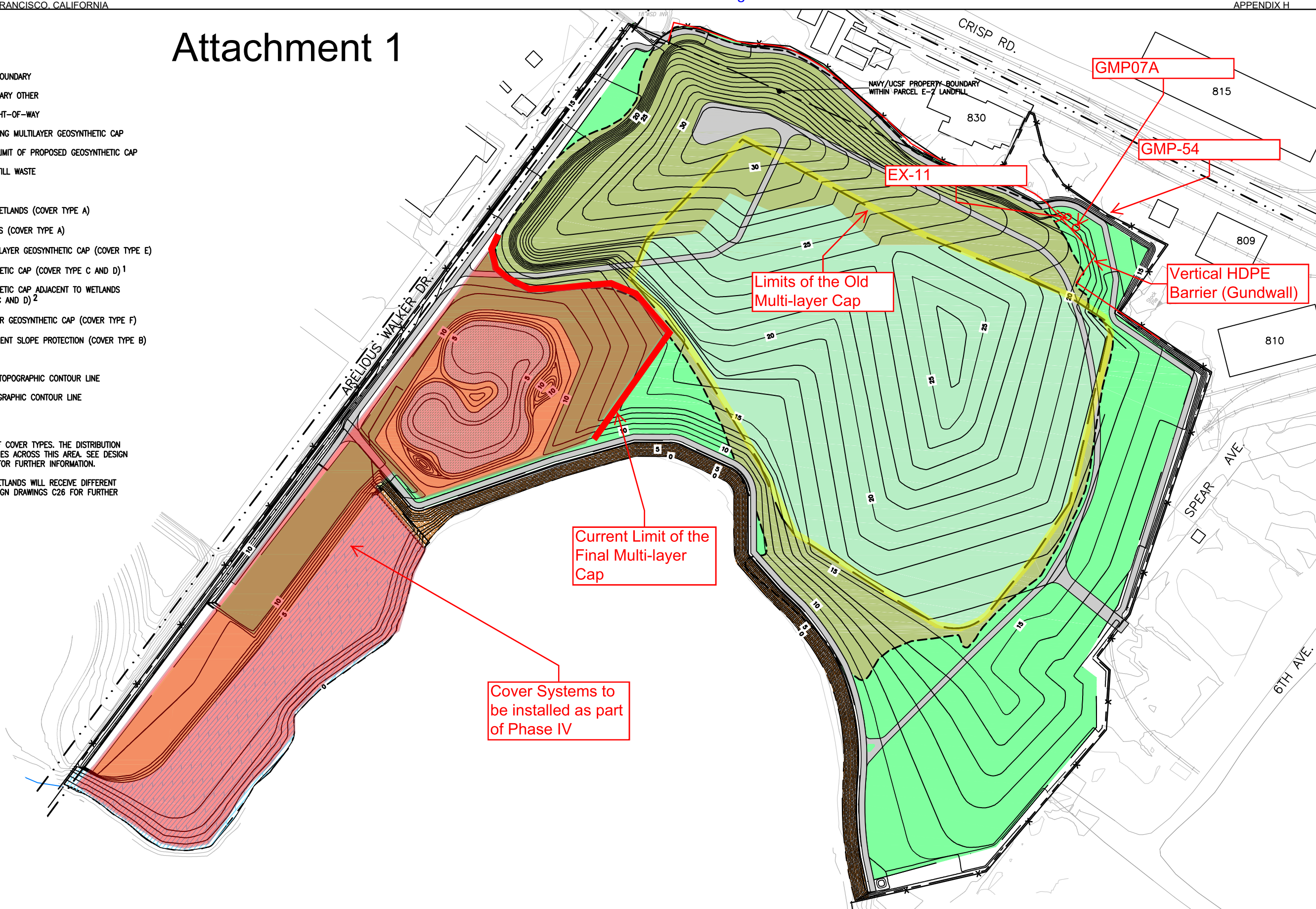
Attachment 1

LEGEND:

- PARCEL E-2 BOUNDARY
- PARCEL BOUNDARY OTHER
- - - - - PROPOSED RIGHT-OF-WAY
- LIMIT OF EXISTING MULTILAYER GEOSYNTHETIC CAP
- - - - - APPROXIMATE LIMIT OF PROPOSED GEOSYNTHETIC CAP
- LIMIT OF LANDFILL WASTE
- x x FENCE
- [Pattern] FRESHWATER WETLANDS (COVER TYPE A)
- [Pattern] TIDAL WETLANDS (COVER TYPE A)
- [Green] EXISTING MULTILAYER GEOSYNTHETIC CAP (COVER TYPE E)
- [Light Green] NEW GEOSYNTHETIC CAP (COVER TYPE C AND D)¹
- [Yellow] NEW GEOSYNTHETIC CAP ADJACENT TO WETLANDS (COVER TYPE C AND D)²
- [Dark Green] NEW MULTILAYER GEOSYNTHETIC CAP (COVER TYPE F)
- [Pattern] RIPRAP REVETMENT SLOPE PROTECTION (COVER TYPE B)
- [Grey] SERVICE ROAD
- [Line 5] FINISH GRADE TOPOGRAPHIC CONTOUR LINE
- [Line 0] EXISTING TOPOGRAPHIC CONTOUR LINE

NOTES:

- ¹ SEE FIGURE 14 FOR DETAILS OF COVER TYPES. THE DISTRIBUTION OF COVER TYPES C AND D VARIES ACROSS THIS AREA. SEE DESIGN DRAWINGS C12, C13 AND C14 FOR FURTHER INFORMATION.
- ² CAPPED AREAS ADJACENT TO WETLANDS WILL RECEIVE DIFFERENT VEGETATIVE SEED MIX. SEE DESIGN DRAWINGS C26 FOR FURTHER INFORMATION.



Engineering/Remediation
Resources Group, Inc.
115 Sansome St., Suite 200
San Francisco, California 94104
(415) 395-9974

CLIENT: Department of the Navy
BRAC PMO West
LOCATION: Hunters Point Naval Shipyard
San Francisco, California

FINAL COVER SYSTEM				
DRAWN BY: SC 02/04/14	CHECKED BY: PL 02/04/14	PROJECT NO. 25-049	FIG NO. 13	

This page intentionally left blank.

Attachment 2

2.2.2 Gas Extraction Units and Treatment System

Hie Navy has two portable gas extraction units with treatment systems. Hie units consist of the following:

- The two gas recovery blowers are Carbonair Model CE-404 1 (maximum flow capacity of about 100 cubic feet per minute [cfm]) equipped with a moisture separator
- Each treatment system consists of two Carbonair Model GPC3 carbon vessels (with 200 pounds of carbon per vessel) in series and one Hydrosil HS-600 vessel (with 400 pounds of permanganate-infused zeolite) as a polishing filter to remove select constituents not removed by the carbon


Appendix A, Fharf InrenYn Monitoring and Control Plan

Attachment 2

Attachment A1 contains additional manufacturer's information on these units. During extraction, the treatment units will remove NMOCs, and methane will be vented to the atmosphere. Methane will be vented to the atmosphere at a minimum elevation of 15 feet above the ground through the polyvinyl chloride (PVC) pipe stack located on each unit. The expected life of the carbon and Hydrosil units on the gas recovery systems will vary depending on the flow rate and influent concentration of the various constituents. Carbonair performed modeling for the filter system and projected that new carbon vessels will last 487 days (16 months), assuming the expected average influent concentration of 2 parts per billion by volume NMOCs and a flow rate of 20 cfm. The Hydrosil vessel, in series with the carbon, is predicted to last 3,300 days (9 years).

Treatment units similar to those on the extraction units (consisting of carbon and Hydrosil) are connected to each of the five vent risers during venting. The treatment units attached to each vent riser will remove NMOCs, and methane is then vented to the atmosphere at about 15 feet above the ground to ensure safe dissipation. The treatment units cause some resistance to flow, decreasing the preferential pathway. They must be maintained in good operating condition to prevent excessive decreases in the venting capacity of the system. Each vent riser has three existing valves that allow the connection of a trailer-mounted, active extraction unit to assist the venting system as necessary to control migration.

Attachment 3 - Boring Log GMP07A

 Tetra Tech EM Inc.	Log of Boring: GMP07A		Drilling Method: HSA Boring Started: 09/12/02 Completed: 09/12/02 Boring Depth (feet bgs): 14.00 Boring Diameter (inches): 5.50 Casing Diameter (inches): 0.75
	Project: GMP WELLS Project No.: DO-003 Location: PARCEL E LANDFILL Ground Surface Elevation (feet MSL): 15.20 Top of Casing Elevation (feet MSL): NA		
Logged By: REBECCA LESHER Logging Consultant: TETRA TECH Drilling Company: GREGG			

DEPTH (FEET)	DRIVE INTERVAL RECOVERY (IN)	SAMPLE ID	Q/M (PPM)	WATER LEVEL	GRAPHIC LOG	ASTM SOIL TYPE	DESCRIPTION	COMMENTS
0							Ground Surface	NOTE: GMP07A IS A REPLACEMENT FOR GMP07. LITHOLOGY IS FROM BORING 5007.
1						CL	CLAY: black staining from 1.5 to 2 feet, reddish brown (EPR 4/4); slightly moist; about 25% fine- to medium-grained sand; occasional fine gravel; 2-inch lens of fine-grained sand (light gray) at 4.25 feet	
2								
3								
4								
5								
6							CLAY with gravel: slightly moist; clay lens from 5.8 to 7 feet containing about 15% fine-grained gravel	
7								
8							CLAY with gravel: very slightly moist, no staining	
9								
10						GR	GRAVEL: increasing gravel content	
11						CL	At 9.5 to 10.5 feet: gravel lens (serpentine)	
12								
13							SANDY CLAY: very dark gray (N3); slightly moist; 70% clay; 30% fine-grained sand; no staining; occasional gravelly layer (about 1 to 2 inches thick); saturated at about 11 feet	
14								
15							Total depth of boring = 14 feet	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

This page intentionally left blank.

Attachment 4

Section 3

Basis of Design

The GMPs in the UCSF compound and along the HDPE barrier wall will be retained for future monitoring (as part of the GCCS). [Section 3.8.5](#) provides additional information on the GMP network at Parcel E-2 and surrounding areas (e.g., GMPs along Crisp Road in Parcel UC-3).

3.8.3. Extraction Wells and Conveyance Piping

Design calculations for [Figure 16](#) and design drawings C30 through C32 in [Appendix B](#) present the piping layout and details for the extraction wells designed to capture LFG from below the cap, minimize migration of LFG along the perimeter of the Parcel E-2 Landfill, and maintain regulatory compliance at the current locations with known LFG impacts (e.g., the northern parcel boundary). A network of 37 vertical extraction wells is proposed to efficiently extract LFG produced by the waste within the Parcel E-2 Landfill. The number and spacing of the extraction wells were revised, relative to information presented in the Draft DBR, based on information (i.e., estimated radii of influence) collected during the recent LFG generation study ([ITSI Gilbane Company, 2014](#)). Further information is presented in [Section 3.8.3.1](#). The extraction wells will be installed within the unsaturated waste layer within the landfill, which extends to depths ranging from 5 to 25 feet bgs. The RAWP will identify procedures to ensure that each extraction well is properly screened within the unsaturated waste layer. One additional extraction well will be installed in the East Adjacent Area

The extraction wells will draw LFG out of the waste and away from the landfill perimeter to control its migration. The network of vertical extraction wells will be spaced sufficiently close together to facilitate capture of LFG from all solid waste areas, especially near the landfill perimeter. The vertical extraction wells (which, as shown on design drawing C31, will be constructed from Schedule 80 polyvinyl chloride [PVC] piping) will be connected with laterals to a header pipe (as shown on design drawing C31, HDPE piping will be used to construct the lateral and header pipes). The lateral and header pipes will be installed underground, but above the protective liner. All extraction wells and their control equipment will be terminated flush with the ground and have vaults with lockable covers at the surface to discourage vandalism. A blower assembly will be used to create a vacuum in the header pipe that will draw LFG to the treatment facility located in the southeast corner of the landfill. The collected gas will then be conveyed through the treatment facility, where methane and NMOCs in LFG will be treated. [Figure 16](#) shows the conveyance piping alignments leading to the treatment facility.

As described in [Section 3.8.1](#), the findings from the recent soil gas survey do not necessitate active extraction in the Panhandle Area or the East Adjacent Area (with one exception in the East Adjacent Area) ([ITSI Gilbane Company, 2014](#)). The following subsections summarize the calculation of the radius of influence for and the construction of the extraction wells.

3.8.3.1. LFG Extraction Well Radius of Influence

Radii of influence were estimated during the LFG generation study using three vertical extraction wells drilled and installed, at depths ranging from 11.5 to 21.5 feet bgs, into the Parcel E-2 Landfill. Each

\\Errg.Net\Active\Projects\2005 Projects\25-049_Navy_HPS_E-2_RI-FS\B_Originals\Remedial-Design\04_Final\DBR\Final_E2_DBR.Docx

ERRG-6011-0000-0036



Attachment 4

Section 3

Basis of Design

extraction well included an array of monitoring probes that were used to record vacuum pressure during the study, which involved active extraction from each of the three extraction wells. Radii of influence were calculated using two empirical equations established by EPA and EMCON, and the results were compared with the field pressure reading (to verify their validity). The results of the LFG generation study are detailed in a draft technical memorandum (ITSI Gilbane Company, 2014).

The draft technical memorandum describes the short- and long-term vacuum tests that were performed and summarizes the resulting data that were used to estimate the radii of influence for the extraction wells. The radius of influence for extraction well ROI-1, which is located in the western portion of the landfill that is not covered by a protective liner, was estimated at approximately 100 feet (note that testing at ROI-1 included installation of the 10-foot-by-10-foot HDPE liner to minimize entrainment of atmospheric air at the extraction well). The estimated radius of influence at ROI-1 is useful in determining the spacing of extraction wells near the edges of the Parcel E-2 Landfill, where the surface materials adjacent to the protective liner may have permeabilities similar to the tested conditions. The estimated radii of influence at ROI-2 and ROI-3, which are located in the central and eastern portions of the landfill that are covered by a protective liner, were estimated at approximately 150 feet for each well (note that testing at ROI-2 and ROI-3 included installation of an HDPE patch onto the existing liner to provide a continuous low-permeability layer). The estimated radii of influence at ROI-2 and ROI-3 are useful in determining the spacing of extraction wells within the interior portions of the landfill. The radii of influence were estimated conservatively, which provides sufficient overlap between extraction wells to account for the heterogeneities in the landfill waste.

The estimated radii of influence were used to refine the spacing of the extraction wells in this design, as shown on Figure 16 and design drawing C30 in Appendix B. The spacing of the extraction wells were adjusted based on the criteria listed below.

- A 100-foot radius of influence was assumed for all extraction wells along the perimeter of the landfill, and a 150-foot radius of influence was assumed for all extraction wells in the interior portions of the landfill.
- The vacuum-induced influence from the extraction wells needed to cover the entire surface area of the Parcel E-2 Landfill and provide incremental overlap between adjacent extraction wells and beyond the landfill extent.
- The vacuum-induced influence from extraction wells in the southwestern portion of the Parcel E-2 Landfill needed to extend slightly into the Panhandle Area to address isolated areas with elevated methane (as described in Section 3.8.1).
- The extraction well field needed to incorporate the three extraction wells (ROI-1, ROI-2, and ROI-3) installed during the LFG generation study.

The resulting extraction well field includes wells along the perimeter of the landfill that are spaced about 173 feet apart and set back about 40 feet from the edge of the landfill. Wells in the interior portion of the

Attachment 5

Section 3

Basis of Design

landfill are spaced about 260 feet apart. Additional wells with assumed 100-foot radii of influence were inserted, as necessary, in a non-uniform pattern to provide 100 percent surface coverage.

3.8.3.2. LFG Extraction Wells Construction

Vertical extraction wells will be constructed of Schedule 80 PVC pipe casings, 4 inches in diameter. The lower section of the well casing will be perforated with 0.5-inch round holes to allow LFG to be extracted from the waste. The perforated length of pipe will typically be from 1/2 to 3/4 of the overall casing length (5 to 25 feet), depending on the depth of the well bore to groundwater and the thickness of waste encountered. The remaining length of the well casing will be constructed of non-perforated pipe to reduce the potential for intrusion of air into the waste and the well. The well casings will be installed in borings ranging from 18 to 24 inches in diameter and backfilled with coarse gravel around the perforated section of pipe and a bentonite seal around the solid section of pipe. An HDPE well boot will be used to seal the pipe casing with the cap geomembrane. A wellhead with a flow control valve will be installed in a lockable, below-grade vault at the top of each casing to monitor gas and adjust flow.

The planned depths and screened intervals for the extraction wells may vary based on the thickness of the unsaturated waste layer encountered during construction. The RAWP will include a table identifying the horizontal coordinates, ground surface elevation, anticipated depth of cover and solid waste, and the estimated range of historical water levels for all planned extraction wells. The RAWP will also specify procedures to verify this information during field construction and, if necessary, adjust the depths and screened intervals for the extraction wells.

3.8.3.3. Conveyance Piping

Conveyance piping refers to the lateral piping and main header piping that transport the LFG flow from the extraction components (vertical wells, vents, and trenches) to the treatment facility. LFG conveyance pipes will be constructed and buried in trenches in the vegetative soil above the geomembrane layer of the final cap. The LFG pipes will be constructed of HDPE, a very durable material for conveying LFG. Design drawing C32 in [Appendix B](#) shows the typical LFG conveyance piping details.

Laterals refer to smaller diameter pipes (2-, 3-, and 4-inch nominal pipe size) that convey LFG from each of the extraction components to the main LFG pipe (i.e., the header). LFG lateral pipes will be constructed of HDPE and will be buried above the geomembrane layer of the cap to facilitate operator access to control valves and condensate sumps. The laterals are generally sloped away from the extraction components and toward the main headers to remove LFG condensate from the waste and facilitate drainage toward the condensate collection sumps. To account for landfill settlement, laterals located over waste will be constructed with a minimum 3 percent slope and will be equipped with flexible connections (as shown in design drawings C30 and C31 in [Appendix B](#)).

This page intentionally left blank.

N: \Graphics\2005\25-049_Navy_HPS_E-2_RI-FS\RD\C31-C33.dwg 7-25-14 07:16:52 AM

CH2M-0007-4930-0008

This page intentionally left blank.



DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING SYSTEMS COMMAND
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE WEST
 33000 NIXIE WAY, BLDG 50 Suite 207
 SAN DIEGO, CA 92147

5000-33B
 Ser BPMOW/281
 December 27, 2023

Mr. David Tanouye
 San Francisco Bay Regional Water Quality Control Board
 1515 Clay Street, Suite 1400
 Oakland, CA 94612

Ms. Karen Ueno
 U. S. Environmental Protection Agency Region 9
 75 Hawthorne St
 San Francisco, CA 94105

Dear Mr. Tanouye and Ms. Ueno:

The Department of the Navy is providing a follow up to Enclosure 4 (GMP-54 Installation Technical Memorandum) from our letter dated October 10, 2023 to the United States Environmental Protection Agency and San Francisco Bay Regional Water Board. GMP-54 was installed on October 12, 2023. The enclosure provides additional technical rationale for the installation of GMP-54 and the initial monitoring results. We look forward to discussing and resolving the methane issue with the regulatory agencies to implement a permanent solution. Please contact Andre Baker at (619) 524-5167, if you have any questions.

Sincerely,

POUND.MICHAEL.J.

Digitally signed by
 POUND.MICHAEL.J.
 Date: 2023.12.27 11:38:48 -08'00'

MICHAEL POUND
 BRAC Environmental Coordinator
 By direction of the Director

Enclosure: Tech Memo Monitoring Update and Additional Technical Rationale for the
 Installation of a New Gas Parcel E-2 Landfill Geomembrane Perimeter Boundary
 Monitoring Probe, December 21, 2023

Copy to: (via email)

Mr. Andrew Bain, United States Environmental Protection Agency

Andrew.Bain@epa.gov

Mr. Michael Howley, California Department of Toxic Substances Control

Michael.howley@dtsc.ca.gov

Mr. Ryan Casey, City of San Francisco Department of Public Health

Ryan.casey@sfdph.org

Ms. Lila Hussain, Office of Community Investment and Infrastructure

lila.hussain@sfgov.org

This page intentionally left blank.

Technical Memorandum

From: Andre Baker, Remedial Project Manager

Via: Michael Pound, BRAC Environmental Coordinator

To: BCT Members

Date: December 21, 2023

SUBJECT: Monitoring Update and Additional Technical Rationale for the Installation of a New Gas Parcel E-2 Landfill Geomembrane Perimeter Boundary Monitoring Probe

The Department of the Navy is providing a follow up to Enclosure 4 (GMP054 Installation Technical Memorandum) from its letter dated October 10, 2023 to the EPA and Water Board. Included here is the Navy's additional technical rationale for the installation of an additional soil gas-monitoring probe (GMP), designated GMP-54 and the results of initial GMP-54 monitoring.

The probe was installed October 13, 2023 on the Parcel E-2 Landfill geomembrane boundary (Attachement 1). The installation of this GMP was in response to the methane exceedance at GMP-07A. The Navy will continue to work with the regulatory agencies to develop and implement a long-term strategy for the exceedance at GMP-07A.

A summary of the rationale for the location, design, and data objective of GMP-54 was provided in Enclosure 4 sent as an attachment to the Navy's October 10, 2023 letter and is updated with lithology and installation information below:

LOCATION

- GMP-54 was installed in close proximity to GMP-06A, GMP-07A and GMP-08A without being under the landfill geomembrane cover system. (Attachment 2)
- GMP-54 was installed approximately 70 ft away from GMP07A in similar lithology as GMP-07A, -06A, and -08A as shown in the boring logs (Attachment 3). Due to the distance, approximately 120 feet between GMP-07A to GMP-06A and GMP-08A and between GMP-06A to GMP-08A, the lithology of the GMP-54 location is similar to the other listed GMPs.
- Upcoming stormwater/sewer line decommission activity will be in close proximity. GMP-54 is located in an area where it will not be affected by this activity once installed. (Attachment 4)

DESIGN

- The installed monitoring probe followed the requirements for the new probes as outlined in the Remedial Design (Attachment 5 and Attachment 6). The requirement is GMPs will be screened approximately 5 feet below ground surface (bgs) (above the historical high groundwater elevation at Parcel E-2) to the historical low groundwater elevation, which varies across Parcel E-2 to a maximum depth of 16 feet bgs (north of the landfill).

Data Objectives

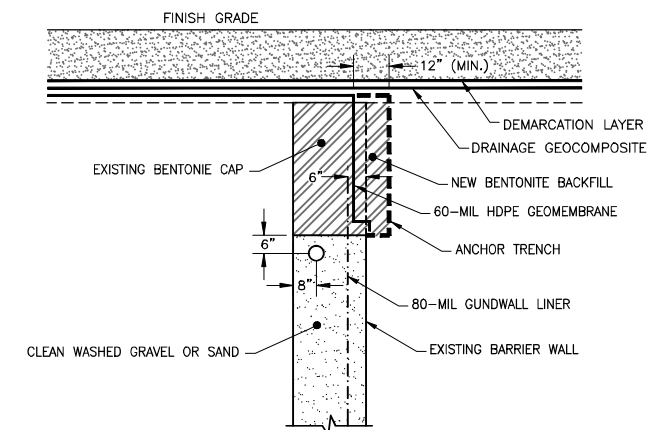
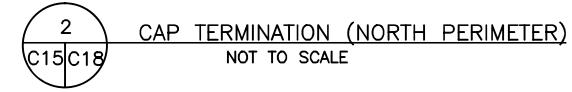
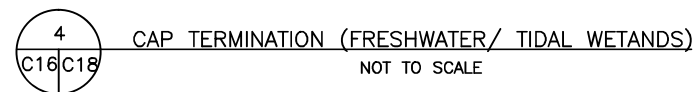
- Ensure that no methane is migrating past the landfill geomembrane boundary above the action level, in accordance with the Record of Decision's ARARs for protecting human health and the environment.
- Gather data regarding subsurface methane near GMP-07A.

Current Measurements from GMP-54

- 10/18/23 – 0.0% methane by volume
- 10/24/23 – 0.0% methane by volume
- 10/31/23 – 0.1% methane by volume
- 11/02/23 – 0.0% methane by volume
- 11/16/23 – 0.0% methane by volume
- 11/30/23 – 0.0% methane by volume
- 12/14/23 – 0.0% methane by volume

Attachments

1. Figure C-18- Cap Termination (Northern Perimeter) Detail 2 (Final Remedial Design ERRG 2014)
2. Figure 13 - Final Cover System with GMP Locations (Final Remedial Design ERRG 2014)
3. GMP-06A,07A and 08A Boring Logs (Final Interim Landfill Gas Monitoring and Control Plan Tetra Tech 2004) and GMP-54 Boring Log (Trevet, 2023)
4. Figure 3- GMP-54 location in relation to future E-2 storm drain and sanitary sewer removal locations
5. Excerpt from Parcel E-2 Design Basis Report page 3-75 (Final Design Basis Report, ERRG 2014)
6. Figure C-31 Details GMP Construction Details (Final Design Basis Report ERRG 2014)






5
C18 C18

GEOMEMBRANE AND BARRIER WALL TIE-IN DETAIL

NOT TO SCALE

Approximate
GMP54 location
between anchor
trench and Parcel
Boundary

ENGINEERING/ REMEDIATION RESOURCES GROUP, INC. SAN FRANCISCO, CA		PREPARED FOR:   Department of the Navy Naval Facilities Engineering Command Base Realignment and Closure Program Management Office West San Diego, CA		PREPARED BY:  Engineering/Remediation Resources Group, Inc. 115 Sausalito Street, Suite 200 San Francisco, California 94134 (415) 356-4974		DATE APPR.	
COVER TERMINATION DETAILS		SIZE D IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY		DESCRIPTION		D	
DRAWN BY: SC		DESIGN BY: PDL		CHIEF ENG: DB		C	
PM/CM: DB		DB		BRAC PMO WEST SAN DIEGO, CALIFORNIA		B	
SIZE: 22" X 34"		SCALE: AS NOTED		PROJ. NO. 25-049		A	
CONSTR. CONTR. NO.		N68711-05-C-6011		DRAWING NO. C18		SHEET 20 OF 49 SHEETS	

This page intentionally left blank.

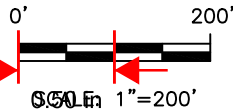
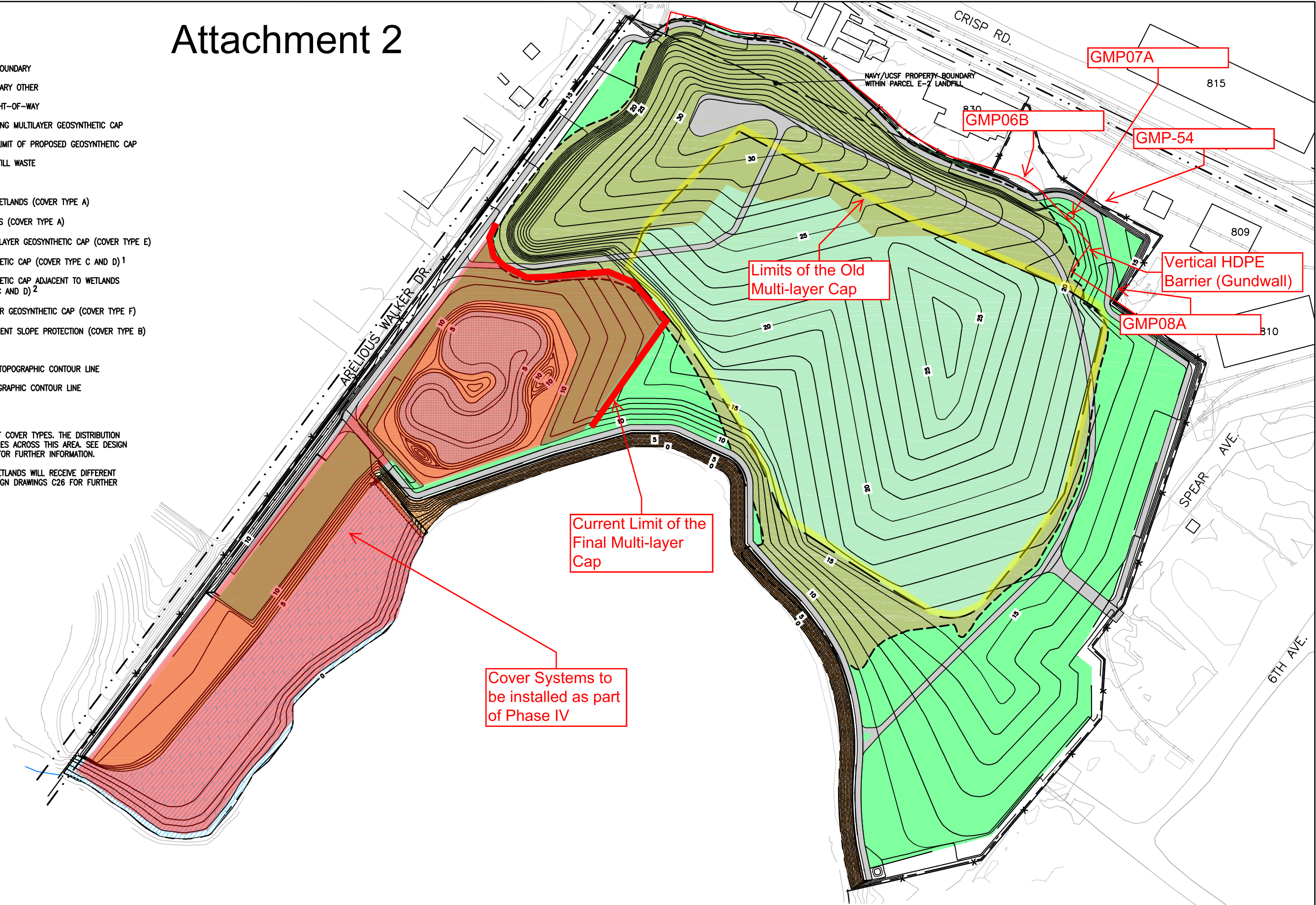
Attachment 2

LEGEND:

- PARCEL E-2 BOUNDARY
- PARCEL BOUNDARY OTHER
- - - - - PROPOSED RIGHT-OF-WAY
- LIMIT OF EXISTING MULTILAYER GEOSYNTHETIC CAP
- - - - - APPROXIMATE LIMIT OF PROPOSED GEOSYNTHETIC CAP
- LIMIT OF LANDFILL WASTE
- X X FENCE
- [Pattern] FRESHWATER WETLANDS (COVER TYPE A)
- [Pattern] TIDAL WETLANDS (COVER TYPE A)
- [Pattern] EXISTING MULTILAYER GEOSYNTHETIC CAP (COVER TYPE E)
- [Pattern] NEW GEOSYNTHETIC CAP (COVER TYPE C AND D) ¹
- [Pattern] NEW GEOSYNTHETIC CAP ADJACENT TO WETLANDS (COVER TYPE C AND D) ²
- [Pattern] NEW MULTILAYER GEOSYNTHETIC CAP (COVER TYPE F)
- [Pattern] RIPRAP REVETMENT SLOPE PROTECTION (COVER TYPE B)
- [Pattern] SERVICE ROAD
- 5 4 3 2 1 FINISH GRADE TOPOGRAPHIC CONTOUR LINE
- 5 4 3 2 1 EXISTING TOPOGRAPHIC CONTOUR LINE

NOTES:

- ¹ SEE FIGURE 14 FOR DETAILS OF COVER TYPES. THE DISTRIBUTION OF COVER TYPES C AND D VARIES ACROSS THIS AREA. SEE DESIGN DRAWINGS C12, C13 AND C14 FOR FURTHER INFORMATION.
- ² CAPPED AREAS ADJACENT TO WETLANDS WILL RECEIVE DIFFERENT VEGETATIVE SEED MIX. SEE DESIGN DRAWINGS C26 FOR FURTHER INFORMATION.



Engineering/Remediation
Resources Group, Inc.
115 Sansome St., Suite 200
San Francisco, California 94104
(415) 395-9974

CLIENT: Department of the Navy
BRAC PMO West

LOCATION: Hunters Point Naval Shipyard
San Francisco, California

DRAWN BY:
SC 02/04/14

CHECKED BY:
PL 02/04/14


PROJECT NO.
25-049

FIG NO.
13

FINAL COVER SYSTEM


This page intentionally left blank.

Attachment 3 - Boring Log GMP06B

 Tetra Tech EM Inc.	Log of Boring: GMP06B	
	Project: GMP WELLS Project No: DO 003 Location: PARCEL E LANDFILL Ground Surface Elevation (feet MSL): 15.10 Top of Casing Elevation (feet MSL): NA	Drilling Method: HSA Boring Started: 11/25/02 Completed: 11/25/02 Boring Depth (feet bgs): 14.00 Boring Diameter (inches): 5.50 Casing Diameter (inches): 0.75
Logged By: REBECCA LESHNER Logging Consultant: TETRA TECH Drilling Company: GREGG		

DEPTH (FEET)	DRIVE INTERVAL RECOVERY (IN)	SAMPLE ID	OWM (PPM)	WATER LEVEL	GRAPHIC LOG	ASTM SOIL TYPE	DESCRIPTION	COMMENTS
0						SC	Ground Surface	NOTE: GMP06B IS A REPLACEMENT FOR GMP06A. LITHOLOGY IS FROM BORING 0006.
1						SC	CLAYEY SAND: very dark grayish brown (2.5Y 3/2); slightly moist; more fine- to medium-grained sand; subangular to subrounded	
2						CL	LEAN CLAY: reddish brown (3.5Y 3/2); 8 to 10% fine-grained sand; color changes to very dark grayish brown (2.5Y 3/2); increase in sand content	
3							Decreasing sand content to about 20%	
4						SC	CLAYEY SAND with gravel: very dark gray (N3); slightly moist; gravel and sand are serpentine in content; sand is well graded; gravel up to 1-inch diameter; no staining	
5								
6								
7								
8								
9								
10								
11								
12								
13								
14							Total depth of boring = 14 feet	
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Attachment 3 - Boring Log GMP07A

 Tetra Tech EM Inc.	Log of Boring: GMP07A		Drilling Method: HSA Boring Started: 09/12/02 Completed: 09/12/02 Boring Depth (feet bgs): 14.00 Boring Diameter (inches): 5.50 Casing Diameter (inches): 0.75
	Logged By: REBECCA LESHNER Logging Consultant: TETRA TECH Drilling Company: GREGG	Project: GMP WELLS Project No: DO-003 Location: PARCEL E LANDFILL Ground Surface Elevation (feet MSL): 15.20 Top of Casing Elevation (feet MSL): NA	

DEPTH (FEET)	DRIVE INTERVAL RECOVERY (IN)	SAMPLE ID	Q/M (PPM)	WATER LEVEL	GRAPHIC LOG	ASTM SOIL TYPE	DESCRIPTION	COMMENTS
0							Ground Surface	
1						CL	CLAY: black staining from 1.5 to 2 feet, reddish brown (EPR 4/4); slightly moist; about 20% fine- to medium-grained sand; occasional fine gravel; 2-inch lens of fine-grained sand (light gray) at 4.25 feet	NOTE: GMP07A IS A REPLACEMENT FOR GMP07. LITHOLOGY IS FROM BORING 5007.
2								
3								
4								
5								
6							CLAY with gravel: slightly moist; clay lens from 5.8 to 7 feet containing about 10% fine-grained gravel	
7								
8							CLAY with gravel: very slightly moist, no staining	
9								
10						GR	GRAVEL: increasing gravel content	
11						CL	At 9.5 to 10.5 feet: gravel lens (perforated)	
12							SANDY CLAY: very dark gray (N3); slightly moist; 70% clay; 30% fine-grained sand; no staining; occasional gravelly layer (about 1 to 2 inches thick); saturated at about 11 feet	
13								
14								
15							Total depth of boring = 14 feet	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								

Attachment 3 - Boring Log GMP08A

DEPTH (FEET)		DRIVE INTERVAL RECOVERY (IN)	SAMPLE ID	QVM (PPM)	WATER LEVEL	GRAPHIC LOG	ASTM SOIL TYPE	DESCRIPTION	COMMENTS
0								Ground Surface	NOTE: GMP08A IS A REPLACEMENT FOR GMP08. LITHOLOGY IS FROM BORING 0008.
1								SANDY CLAY: very dark brown (10YR 3/1); very slightly moist; 30% sand; occasional gravel	
2								CLAYEY SAND: greenish gray (5G 5/1); fine- to medium-grained	
3								SANDY CLAY: greenish gray (5G 4/1); occasional gravel	
4								Poor recovery from 3 to 12 feet due to cobble/boulder	
5		14							
6									
7									
8									
9									
10									
11		24							
12								Total depth of boring = 12 feet	
13									
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									
31									
32									
33									
34									
35									

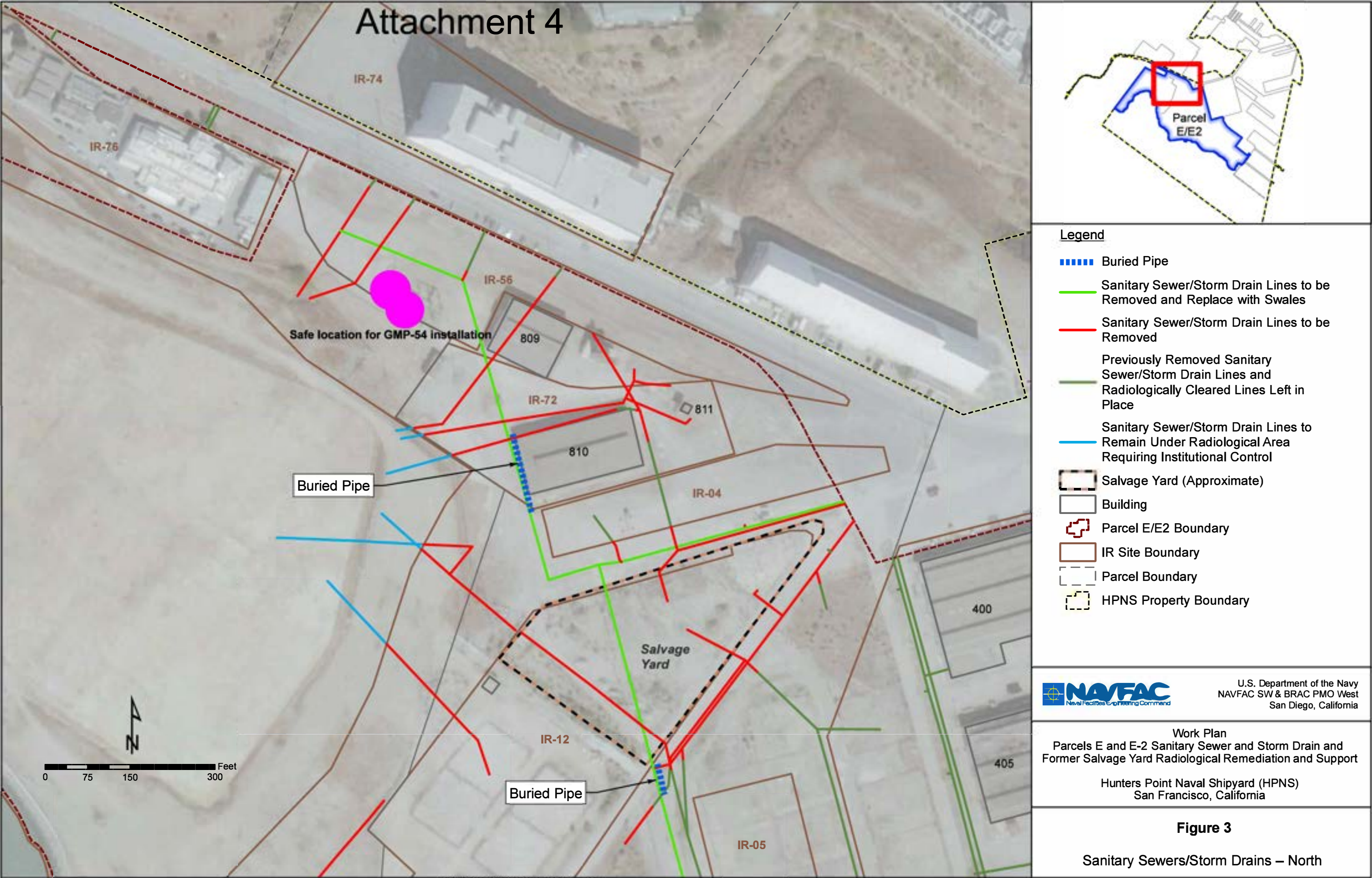


Attachment 3 - Boring Log GMP54

Borehole Log/Well Completion Log

Project Name: Hunters Point BGMP				Project Number: 1261-008				Borehole Number: GMP-54	
Borehole Location: Parcel E-2				Northing:		Easting:		Sheet of	
Drilling Agency: Cascade Drilling				Driller: Gary W.					
Drilling Equipment: CME75				Date Started: 10/13/23		Total Depth (feet): 13.00			
Drilling Method: HOLLOW STEM AUGER		Number of Soil Samples: 0		Date Finished: 10/13/23					
Drilling Fluid: N/A		Borehole Diameter (in): 8		Depth to Water (feet):		Drilling: 13.0		Static: 8.0	
Completion Information: Landfill Gas Monitoring Well				Elevation (feet MSL):					
				Logged By: Megan Hutchinson		Checked By: Erin Rosen, PG			

Depth (feet)	Samples				Field Analyses		Log		Lithologic Description	Well Details	Remarks
	Number	Type	Blow Count	Percent Recovery	Time	PID/FID (ppm) Sample	Additional Tests	Graphic			
0									Artificial Fill Material		
1						PID = 48			GRAVELLY LEAN CLAY, black (7.5YR 2.5/1), low plasticity, non cohesive, dry, 30% well-graded angular gravel, strong petroleum odor		Annular Seal
2											
3						PID = 33.86			Same as above; less gravel		Bentonite Seal
4						PID = 56.29			LEAN CLAY WITH GRAVEL, dark brown (7.5YR 3/4), low plasticity, non cohesive, dry, 20% well-graded angular gravel, slight odor		
5											
6						PID = 68.6			Same as above; moist, less gravel		#2/16 Gravel Filter Pack
7						PID = 31.31			Same as above; light greenish gray (GLEY1 8/1), some oxidation staining		0.10 Slotted Screen
8									LEAN CLAY, dark brown (7.5YR 3/4), some oxidation staining, medium plasticity, cohesive, moist, 10% well-graded angular gravel, slight odor		
9						PID = 62.85			Same as above; less gravel		
10											
11									Same as above; wet		Backfill
12						PID = 40.36					
13											



This page intentionally left blank.

Attachment 5

Section 3

Basis of Design

specific pre-treatment requirements). If confirmed to be suitable for discharge, the condensate may be transported to an appropriate treatment facility either by hauling or via an existing sanitary sewer connection.

The San Francisco Public Utilities Commission (SFPUC) enforces a Pretreatment Program regulating discharges from nondomestic sources into the city's sewerage system. Regulations governing these discharges are contained in the city's sewer use ordinance (Article 4.1, Chapter X, Part II of the San Francisco Municipal Code). Additional wastewater pollutant limitations are contained in Department of Public Works Order No. 158170. In San Francisco, SFPUC issues Industrial User Permits to "industrial users" for regular or continuous discharges that result from commercial or industrial operations. SFPUC also issues Batch Wastewater Discharge permits for nonroutine, episodic, or other temporary discharges. The discharge of pre-treated LFG condensate will require prior permit application and issuance. The permits specify the conditions under which wastewater may be discharged into the sewer system. Permits are issued for a specified duration and are tailored to each user. In addition to the specific limits, all dischargers shall comply with all requirements set forth in federal Categorical Pretreatment Standards and other applicable federal regulatory standards, and applicable state orders and water quality control regulations, permits, and orders.

3.8.5. GMP Network

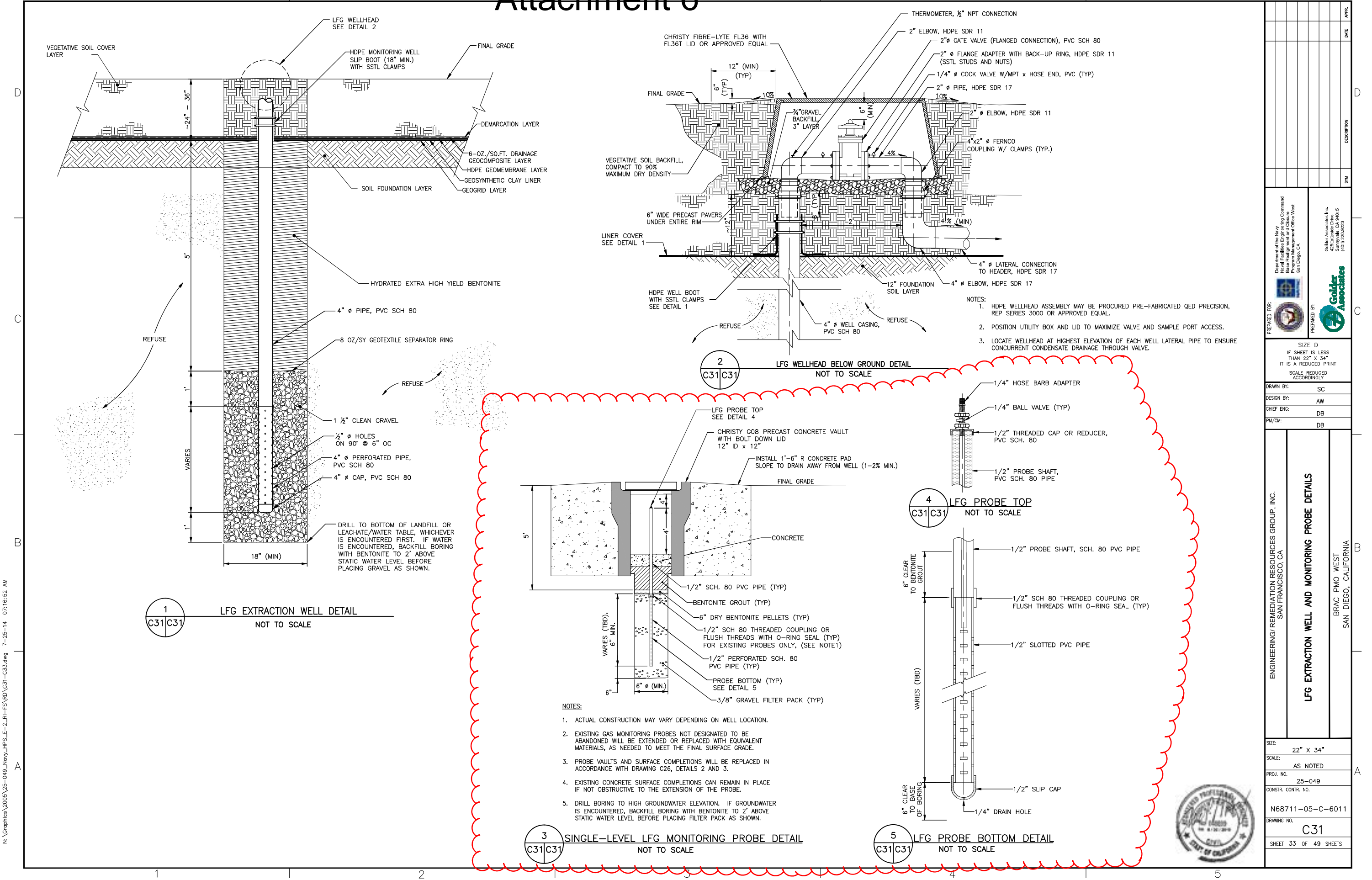
Monitoring of LFG is required to meet the RAOs and to demonstrate compliance with Title 27 Cal. Code Regs. § 20917 through § 20934, "Gas Monitoring and Control at Active and Closed Disposal Sites." The gas monitoring system will be designed to account for:

- Local soil, rock, and hydrogeological conditions
- Locations of buildings and structures relative to the waste disposal area
- Adjacent land use and inhabitable structures within 1,000 feet of the landfill
- Manmade underground structures, such as vaults
- The nature and age of waste and its potential to generate LFG

Several general assumptions were made to develop the RD and costs for the LFG monitoring component. LFG will not migrate below the groundwater table, which is between 6 and 20 feet bgs, so GMPs will not be screened below the water table. Rather, GMPs will be screened from approximately 5 feet bgs (above the historical high groundwater elevation at Parcel E-2) to the historical low groundwater elevation, which varies across Parcel E-2 to a maximum depth of 16 feet bgs (north of the landfill). Existing GMPs are located approximately 150 feet apart on the Parcel E-2 boundary north of the landfill, and this spacing will continue to be used to complete the compliance monitoring boundary on the western and eastern sides of Parcel E-2.

This page intentionally left blank.

Attachment 6



N:\Graphics\2005\25-049_May_HFS_E-2_RI-FS\RD\C31-C33.dwg 7-25-14 07:16:52 AM



Department of the Navy Naval Facilities Engineering Command Civil Engineering Division Program Management Office West San Diego, CA		PREPARED FOR:	PREPARED BY:
SIZE D IF SHEET IS LESS THAN 22" X 34" IT IS A REDUCED PRINT SCALE REDUCED ACCORDINGLY		DRAWN BY:	SC
		DESIGN BY:	AW
		CHIEF ENG:	DB
		PM/CM:	DB
ENGINEERING/ REMEDIATION RESOURCES GROUP, INC. SAN FRANCISCO, CA		LFG EXTRACTION WELL AND MONITORING PROBE DETAILS	
		BRAC PMO WEST SAN DIEGO, CALIFORNIA	
SIZE: 22" X 34"		SCALE: AS NOTED	
PROJ. NO. 25-049		CONSTR. CONTR. NO. N68711-05-C-6011	
DRAWING NO. C31		SHEET 33 OF 49 SHEETS	

This page intentionally left blank.

Appendix I

Comments and Responses to Regulatory Agency Comments on Draft Fifth Five-Year Review Report and Climate Resilience Assessment

This page intentionally left blank.



San Francisco Bay Regional Water Quality Control Board

April 30, 2024

U.S. Department of the Navy
Attn: Michael Pound, BRAC Environmental Coordinator
NAVFAC BRAC PMO West
33000 Nixie Way, Bldg. 50, 2nd Floor
San Diego, CA 92147
Sent via email only: michael.j.pound.civ@us.navy.mil

Subject: Regional Water Board Comments on November 2023 Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, San Francisco County

Dear Mr. Pound:

The San Francisco Bay Regional Water Board (Regional Water Board) has reviewed the subject Draft Fifth Five-Year Review Report (Draft Five-Year Review) for the Former Hunters Point Naval Shipyard (HPNS).

Our preliminary protectiveness determinations are different from the Navy's for Parcel B-2, Parcel C, and Parcel E-2; and we are requesting additional details or supporting information to be able to concur with the Navy's determination for all parcels due to the climate change vulnerabilities and/or presence of per- and polyfluoroalkyl substances (PFAS) as summarized in the table below:

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-2*	Short-Term Protective	Not Protective
Parcel C*	Short-Term Protective	Protectiveness Deferred
Parcel E-2*	Will Be Protective	Protectiveness Deferred
Installation Restoration Site 07/18	Protective	Requesting additional details/information to support Navy's position

ALEXIS STRAUSS HACKER, CHAIR | EILEEN M. WHITE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-1 Parcel C Parcel UC-2 Parcel D-1 Parcel UC-1 Parcel D-2 Parcel G Parcel UC-3	Short-Term Protective	Requesting additional details/information to support Navy's position
Parcel E	Will be Protective	Requesting additional details/information to support Navy's position

* For Parcel B-2, Parcel C, and Parcel E-2, in addition to differing positions based on our technical assessment of the remedies, we are requesting additional details/information to support Navy's position due to the climate change vulnerabilities and/or presence of PFAS.

We defer to Department of Toxic Substances Control (DTSC) and United States Environmental Protection Agency (USEPA) regarding the radiological findings presented in the Draft Five-Year Review.

We will continue to meet and work collaboratively with the Navy and our regulatory counterparts and look forward to satisfactory resolution to our attached comments, so that we will be able to provide our concurrence on the Final Five-Year Review.

If you have any questions, please contact me at Mary.Snow@waterboards.ca.gov or (510) 622-2338.

Sincerely,



Mary Snow, P.G.
Remedial Project Manager
Groundwater Protection Division

Attachment: Regional Water Board Comments

Copy to:

Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Michael Howley, DTSC, Michael.Howley@dtsc.ca.gov
Ryan Casey, SFDPH, Ryan.Casey@sfdph.org
Andy Bain, USEPA, Bain.Andrew@epa.gov

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Attachment

Regional Water Board Protectiveness Determination Comments

1. **Comment 1a:** We do not agree with the protectiveness statement provided in the Draft Five-Year Review for Parcel B-2, Installation Restoration (IR) Site 26. The Regional Water Board's preliminary protectiveness determination for Parcel B-2, IR Site 26 is "Not Protective." This determination is consistent with USEPA guidance (2012) because for mercury concentrations in groundwater the "[M]igration of contaminants is uncontrolled and poses an unacceptable risk to human health and the environment; or potential or actual exposure is clearly present or there is evidence of exposure."

Comment 1b: The remedy at Parcel B-2, IR Site 26 is not protective because elevated mercury concentrations in groundwater may be discharging to San Francisco Bay (Bay). Therefore, development of a new primary document work plan focused on alternative treatments and treatment methodologies is warranted as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing this work plan with appropriate implementation timelines that are agreeable to the Federal Facility Agreement (FFA) signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' (i.e., USEPA, Department of Toxic Substances Control (DTSC), and Regional Water Board) comments and concerns regarding the status of the remedy for Parcel B-2, IR Site 26. The remedy at Parcel B-2 includes soil excavation, installation of a durable cover, in situ stabilization of mercury in groundwater, monitoring, and institutional controls.

The Navy's "Short-Term Protective" determination for Parcel B-2 IR Site 26 groundwater is not supported due to elevated concentrations of mercury in groundwater, as identified in the following Regulatory Agencies' correspondence: Tri-Agency [Letter](#) dated August 20, 2021, Tri-Agency [Letter](#) dated November 23, 2021, DTSC Note to File - [Non-Concurrence](#) dated December 23, 2021, and Regional Water Board [Letter](#) dated March 14, 2022.

Specifically, after a three-year performance and post-treatment monitoring period, the remedial action, in situ stabilization using the reagent Metafix, has failed to reduce mercury concentrations in groundwater to below 0.6 micrograms per liter (µg/L), the Parcel B Remedial Design (RD) trigger level. Elevated concentrations of mercury in groundwater are in "sentinel" wells, representing a discharge to the Bay. Additionally, the Regional Water Board's concerns regarding the validity of the development of the trigger concentration for mercury have not been addressed by the Navy.

2. **Comment 2a:** We do not agree with the Navy's protectiveness determination for Parcel C. The Regional Water Board's preliminary protectiveness determination for

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel C is “Protectiveness Deferred.” This determination is consistent with USEPA guidance (2012) because it is unknown if the response should be “yes” to “Question B - Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?”

Comment 2b: A protectiveness determination of the remedy at Parcel C cannot be made at this time until further information is obtained. Further information will be obtained upon successful implementation of the *Deep Fractured Water Bearing Zone (F-WBZ) Investigation for Remedial Unit-C4 (RU-C4)* and the planned B-aquifer investigation, at which time a protectiveness determination can likely be made. Our expectation is that the Draft-Final Five-Year Review will specify these documents as “follow-up actions” and commit to implementation timelines that are agreeable to the FFA signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies’ comments and concerns regarding the status of the remedy for Parcel C. The remedy at Parcel C includes soil excavation, installation of a durable cover, soil vapor extraction, in situ treatment of groundwater, monitoring, and institutional controls. The Navy’s “Short-Term Protective” determination for Parcel C is not supported for groundwater due to data gaps in the understanding of the communication/connections between the hydrologic units within Parcel C, as documented in the following Regulatory Agencies’ correspondence: Joint-Agency [Letter](#) (USEPA) dated July 30, 2021, Joint-Agency [Letter](#) (USEPA) dated September 17, 2021, and Tri-Agency [Letter](#) dated May 24, 2022.

Specifically, the connection and communication between hydrogeologic units within Parcel C is not fully understood; therefore, further characterization is required to demonstrate that 1) remedies within the A-aquifer will be effective and not recontaminated by chemicals of concern (COCs) within the B-aquifer and/or Deep F-WBZ and 2) unacceptable discharges to the Bay are not and will not occur.

3. **Comment 3a:** We do not agree with the Navy’s protectiveness determination for Parcel E-2. The Regional Water Board’s preliminary protectiveness determination for Parcel E-2 is “Protectiveness Deferred” because the remedy components were not implemented (turbidity curtain) or constructed as designed (Upland Slurry Wall). There are data gaps regarding lead contamination within the wetland, concerns regarding stormwater management practices during construction, questions regarding management of hazardous waste piles, and ongoing concerns regarding the management and monitoring of methane in soil gas at Parcel E-2.

Comment 3b: A protectiveness determination of the remedy at Parcel E-2 cannot be made at this time until further information is obtained. Further information and data should include:

- Obtaining as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- Monitoring water levels and collecting analytical data to demonstrate the Upland Slurry Wall is functioning as designed.
- Collection of soil samples in the vicinity of Resource Conservation and Recovery Act (RCRA) hazardous waste piles.
- Collection of soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated.
- Provide a revised compliance monitoring and mitigation plan for methane at the landfill.
- Provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2.

These actions should be prioritized by the FFA Remedial Project Managers and/or based on imminent exposure threats. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing the appropriate primary documents to address these concerns and include implementation timelines that are agreeable to the FFA signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' comments and concerns regarding the status of the remedy for Parcel E-2. The remedy at Parcel E-2 includes soil excavation, installation of a durable cover, installation of belowground barriers, landfill gas monitoring, collection, and treatment, long-term monitoring of groundwater, radiological screening and remediation, and institutional controls.

The Navy's "Will be Protective" determination for Parcel E-2 is not supported due to concern regarding remedy implementation and site characterization, as documented in the following Regulatory Agencies' correspondence: Regional Water Board [Letter](#) dated March 6, 2023, Regional Water Board [Letter](#) dated August 7, 2020, Regional Water Board [Letter](#) dated December 15, 2020, Joint-Agency [Letter](#) dated March 16, 2021, Joint-Agency [Letter](#) dated April 28, 2021, Tri-Agency [Letter](#) dated May 5, 2022, Regional Water Board [Letter](#) dated August 17, 2022, Tri-Agency [Letter](#) dated December 8, 2022, Regional Water Board [Letter](#) dated December 13, 2022, and Joint-Agency [Letter](#) (USEPA) dated July 18, 2023.

Although it is understood that the remedy has not been fully implemented, the Navy has not addressed Regulatory Agencies' concerns regarding: lack of deployment of turbidity curtain during construction, stormwater best management practices/records keeping, Upland Slurry Wall not implemented as designed, request for as-built designs for changes to the Upland Slurry Wall, methane mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- 4. Comment 4:** The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the presence of PFAS, a class of chemical compounds that are considered emerging contaminants. The Navy must provide sufficient additional details to demonstrate that the protectiveness determinations are appropriate for each parcel. Otherwise, the determination should be “Protectiveness Deferred” with respect to PFAS.

It is understood that PFAS investigations are ongoing. However, the findings in the *Site Inspection for Basewide Investigation of Per- and Polyfluoroalkyl Substances* (Liberty 2023) determined that a remedial investigation is necessary for all parcels for both soil and groundwater, therefore the extent of PFAS contamination is currently unknown. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and Parcel UC-3.

The Navy must provide additional justification for their responses to protectiveness Questions A, B, and C (USEPA [2001](#) and [2012](#)) with data and information that can demonstrate that remedies that were not specifically designed to prevent exposures to PFAS contamination are protective of human health and the environment. Additional supporting information could include but is not limited to exposure assumptions for PFAS, a discussion of remedy design features that can/will prevent exposures to PFAS, and figures showing the distribution of PFAS concentrations in context of remedy boundaries.

- 5. Comment 5a:** With respect to protectiveness determinations, additional justification/evaluations for climate vulnerability should be presented in the Draft-Final Five-Year Review. Media of concern and associated exposure assumptions should be considered in the context of existing Institutional Controls and Engineering Controls or other remedy components to support the Navy’s protectiveness statements. Otherwise, a “Protectiveness Deferred” determination may be most appropriate in the context of climate vulnerability.

Comment 5b: There is an urgency to conduct parcel-specific climate vulnerability assessments at all parcels as soon as practical, with a prioritization of Parcel D-1, Parcel E, and Parcel E-2.

The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the findings in the Climate Resilience Assessment (CRA), Appendix A, and the site-specific data and information collected during the reporting period.

The CRA is a screening-level assessment of climate-related hazards, their potential impacts, and whether vulnerabilities were identified that may impact the protectiveness of the remedies at HPNS.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

We acknowledge that this CRA is a screening or baseline assessment, but additional parcel-specific evaluation is required. Examples of the urgency for additional work include but are not limited to:

- Transient inundation is likely to occur within the next 11 years at Parcel D-1, Parcel E, and Parcel E-2.
- 11 years may not leave adequate time for planning if remedies require modifications to become or remain protective.
- As documented in Regional Water Board (M. Snow) [email](#) dated January 30, 2024, flooding/standing water observed January 23, 2024, at Parcel E may demonstrate that transient inundation predictions for 2035 are not conservative enough.
- Observance of “sinkholes” attributed to tidal waters and subsidence near Buildings 205, 207, and 208 at Parcel C.
- COCs and chemicals of potential concern (COPCs) in soil not currently saturated may be subject to mobilization with a small rise in groundwater elevation.

Parcel-specific assessments should be conducted at all parcels. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and UC-3. However, Parcel D-1, Parcel E, and Parcel E-2 should be prioritized.

Regional Water Board Specific Comments

- 1. Five Year Review Summary Form, Page XVII, and Section 1.1 Purpose and Approach, Section 2.1 Site Interviews** - page 1.1 text states, “[T]he Five-Year Review included a document and data review, required visual site inspections, and interviews.”

Specific Comment 1: The Regulatory Agency site inspection was not conducted until after the Draft Five-Year Review was submitted. Also, it is unclear why interviews were limited to Navy contractors and were not conducted with Navy personnel, Regulatory Agencies, local authorities, including San Francisco Department of Public Health (SFDPH), nearest neighbors, and/or community members; this is inconsistent with USEPA guidance ([2001](#)).

The form should be updated to include January 23, 2024, the date of the Regulatory Agencies’ Fifth Five-Year Review site inspection. Justification for why interviews were limited to Navy contractors should be provided. Also, interviews should be conducted with the Navy personnel, Regulatory Agencies, SFDPH, nearest neighbors, and/or community members and provided in the Draft-Final Five-Year Review.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- 2. Five Year Review Summary Form, Page XVII; Section 1.1 Purpose and Approach, and Section 2.6, Next Five-Year Review** - page 1-1 text states, “The triggering action for statutory Five-Year Reviews at HPNS was the date of mobilization for the remedial action (RA) activities at Parcel B, which was July 8, 1998. The triggering action for this Fifth Five-Year Review is the signature of the Fourth Five-Year Review, July 31, 2019 (Navy, 2019)”. Section 2.6, page 2-2 text states, “[T]he next Five-Year Review is due to be finalized 5 years from the signature of this Five-Year Review, which is anticipated to be in 2029.”

Specific Comment 2: Per USEPA letter dated November 16, 2023, the Sixth Five-Year Review is due November 8, 2028; therefore, the Draft-Final Five-Year Review should be revised accordingly.

- 3. Section 1.2 Environmental Restoration Program, and Figure 1-2 Installation Restoration Sites** - page 1-2 the text states “In most cases, IR sites were identified by a two-digit number (for example, IR-02),” but depicted as single digits on Figure 1-2 for IR sites 1 through 9 instead of 01 through 09.

Specific Comment 3: For clarity two-digit nomenclature for IR sites 01 through 09 should be used throughout the Five-Year Review.

- 4. Section 1.4.1 Per- and Polyfluoroalkyl Substances** - page 1-7 text states “Because investigation of PFAS is ongoing and it has not yet been determined whether PFAS pose unacceptable risk that requires RA [Remedial Action], and because a remedy for PFAS has not yet been determined, a protectiveness determination cannot be made.”

Specific Comment 4: This is not consistent with USEPA Guidance (September [2012](#)) regarding protectiveness statements for emerging contaminants. Per USEPA Guidance (September [2012](#)) for emerging contaminants protectiveness is deferred. Unless parcel specific evaluations of existing PFAS concentrations, likely data gaps, media of concern, and exposure assumptions are conducted in the context of existing Institutional Controls, Engineering Controls, or other remedy components to support the Navy’s protectiveness statements, then “Deferred Protectiveness” is appropriate for sites with PFAS detections. See Protectiveness Determination Comment 4 above.

- 5. Section 1.4.3.1 Progress Since the Fourth Five-Year Review** - Discussion in this section was limited to the radiological retesting.

Specific Comment 5: This section should be consistent with the issues, recommendations, and other findings as presented in the last Five-Year Review and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

not limited to radiological retesting. The *Final Fourth Five-Year Review* (2019) “Issues, Recommendation and Other Findings” included the following items:

- SVE [soil vapor extraction] implementation in Parcels B-1 and C is reducing source mass, but with limited effectiveness due to diffusion-limited conditions in the subsurface.
- The Regulatory Agencies do not agree with the Navy’s risk assessment methodology used to reduce the ARICs [areas requiring institutional controls] for VOC [volatile organic compounds] vapors.
- The Navy has determined that a significant portion of the radiological survey and remediation work completed to date was not reliable because of manipulation and/or falsification of data by one of its radiological contractors. A long-term protectiveness evaluation of the radiological RGs [remediation goals] has not yet been completed for this fourth Five-Year Review, and it is currently not known if the RAOs for radionuclides have been achieved in Parcels B-1, B-2, C, D-1, D-2, G, E, UC-1, UC-2, and UC-3.

Specific updates for the SVE implementation at Parcels B-1 and C, as well as the status of the disagreement regarding the Navy’s risk assessment methodology used to reduce the ARICs for VOC vapors from the Fourth Five-Year Review, including milestones and timelines, should be provided in the Draft-Final Fifth Five-Year Review.

- 6. Section 3.4.1.2 Remedy Operations and Maintenance, Durable Cover Maintenance (IR 07/18), 3.4.2.2 Remedy Operations and Maintenance, Durable Cover (B-1); Section 3.4.3.2 Remedy Operations and Maintenance, Durable Cover (B-2), Section 4.4.1.2 Remedy Operations and Maintenance, Durable Cover (Parcel C), and Section 6.4.2.2 Remedy Operations and Maintenance, Durable Cover (E-2) -** provides information regarding remedy operations and maintenance for the durable covers and monument surveys.

Specific Comment 6a: The 2023 monument surveys results were not provided, and the frequency of monument surveys is not specified in the Draft Five-Year Review. Provide the 2023 monument survey results in the Draft-Final Five-Year Review.

Specific Comment 6b: Provide the frequency of the monument surveys by parcel, i.e., IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, and Parcel E-2.

Specific Comment 6c: Consider increasing the frequency of monument surveys in support of evaluating impacts on the remedies due to sea level rise/groundwater rise.

- 7. Section 3.4.1.1 Remedy Implementation -** page 3-7 text states “[S]ince at least 2009, concentrations of COCs and ROPCs [radionuclides of potential concern] have remained under their TLs [trigger levels], except for lead in September 2017 and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

March 2022 (TRWB, 2023). Concentrations of lead exceeded the TL but were within the same order of magnitude as the TL (14.44 µg/L) at two locations (23 and 23.9 µg/L) in March 2022 and were below laboratory detection limits during the September 2022 event (Appendix E, Figure 3-5)."

Specific Comment 7: The Draft-Final Five-Year Review should provide a discussion of groundwater flow directions and include groundwater flow path depictions on Figure 3-5, and trend analysis for lead concentrations in wells IR07MW24A and IR07MW26A. With the fluctuating lead concentrations in groundwater and the lack of sentinel wells between the elevated concentrations in groundwater and the Bay, it is unclear if the remedy is adequately protective of ecological receptors and that lead is not being discharged to the Bay.

- 8. Section 3.5.1, Question A: Is the Remedy Functioning as Intended by the Decision Document? and Section 3.5.1.3, Parcel B-2** - with respect to IR Site 26, the Navy responded "yes" to Question A.

Specific Comment 8: A "yes" response is inconsistent with the mercury exceedances in groundwater, as well as not adequately reflecting regulatory comments and concerns since the Forth Five-Year Review. The Draft-Final Fifth Five-Year Review should be revised to respond "No" to Question A. See Protectiveness Determination Comment 1 above.

- 9. Section 3.5.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?** - with respect to IR Site 26, the Navy responded "yes" to Question B.

Specific Comment 9: It is not clear if the cleanup levels associated with mercury in groundwater are still valid. As the Navy has not responded to the Regional Water Board [Letter](#) dated March 14, 2022, regarding the development of the 0.6 µg/L as the Parcel B RD trigger level for mercury. The response to Question B may be "no" and the Navy should provide a response to the Regional Water Board's concerns with respect to the mercury trigger level to justify that the RAOs are still valid. See Protectiveness Determination Comment 1 above for additional details.

- 10. Section 3.6 Issues, Recommendations, and Follow-up Actions and Table 3-8 Parcel B Issues, Recommendations, and Follow-up Actions** - provides a summary of the Issues, Recommendations, and Follow-up Actions for Parcel B, including, Parcel B-2 IR Site 26.

Specific Comment 10: There are outstanding Regulatory Agencies' comments and recommendations related to the remedy at Parcel B-2 IR Site 26 that were not included in this section or on this table, as detailed in the Protectiveness Determination Comment 1 above.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

The following issues need to be included in this section: 1) Metafix has failed to reduce mercury in groundwater to concentrations below the Parcel B RD trigger level and 2) elevated concentrations of mercury in groundwater are in “sentinel” wells, representing a discharge to the Bay. The recommendations and follow-up actions should include development of a new primary document work plan focused on alternative treatments and treatment methodologies as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness.

11. Figure 3-5, March and September 2022 Exceedances of Remediation Goals in Parcels B-1 and B-2 and IR-07/18 and Figures 4-4 through 4-7 - The figures show exceedances of remediation goals in groundwater.

Specific Comment 11: The figures showing exceedances of remediation goals in groundwater do not include groundwater flow direction. General groundwater flow direction arrows should be presented on figures that show exceedances of remediation goals for COCs in groundwater.

12. Section 4.2.1.1 Geology and Hydrogeology, Section 5.2.1.2 Geology and Hydrogeology, and Section 6.2.1.1 Geology and Hydrogeology - sections describe hydrogeologic characteristics including B-Aquifer.

Specific Comment 12: B-Aquifer groundwater elevations are not provided in these sections. B-Aquifer groundwater elevation ranges should be provided in Section 4.2.1.1, Section 5.2.1.2, and Section 6.2.1.1.

13. Section 4.4.1.1 Remedy implementation, Soil Excavation and Removal - The text discusses changes to the Remedial Action Work Plan (RAWP) based on the findings of Pre-RA investigation. For RUC1 on page 4-6 the text states “[T]he Navy is evaluating options to treat the DNAPL source area and, subsequently, the associated groundwater plume.” And for RU-C2 the text states “The Navy is evaluating a revised approach to achieve soil RAOs and address a potential ongoing source to A-aquifer groundwater (ECC-Insight, 2019).” On page 4-8 for the Soil Vapor Extraction Monitoring the text states “[T]he Navy is in the process of reviewing the strategy for addressing soil gas at all Parcel C areas in conjunction with additional in situ groundwater remediation activities that are ongoing (ECCInsight and CDM Smith, 2019).”

Specific Comment 13: The text discusses changes to the RAWP based on the findings of Pre-RA investigation but does not provide specificity regarding a timeline for how and when alternatives will be evaluated or provided for review. For clarity, Section 4.4.1.1 should be revised to indicate which documents these evaluations will be presented in and when they will be provided to the Regulatory Agencies for review.

14. Section 4.4.1.2 Remedy Operations and Maintenance - as stated on page 4-14, “[A] 7-foot-deep void observed along the pier edge that allowed water to wash in and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

out with the tide may have contributed to the sinkholes;" a number of "sinkholes" were observed and for some their presence was attributed to tidal action.

Additionally, the text states that, "Subsidence was noted near Buildings 205, 207, and 208 between Dry Dock 2 and Dry Dock 3 that required extensive repairs outside of routine O&M, and 100 feet of permanent chain-link fence was installed across Building 208 to secure the end of the pier."

Specific Comment 14: It does not appear that existing Operations and Maintenance (O&M) methodologies are adequate to address these concerns. The Navy should provide the long-term strategies to address "sinkholes" and subsidence for Parcel C.

- 15. Section 4.5.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?** - with respect to Parcel C, the Navy responded "yes" to Question B.

Specific Comment 15: The response to Question B should be "uncertain" at this time because the connection and communication between hydrogeologic units within Parcel C is not fully understood. See Protectiveness Determination Comment 2 above for additional details.

- 16. Section 4.6 Issues, Recommendations, and Follow-up Actions, and Table 4-8 Parcel C and UC-2 Issues, Recommendations, and Follow-up Actions -** provides a summary of the issues, recommendations, and follow-up actions for Parcel C.

Specific Comment 16: Radiological retesting should not be the only issue presented in Section 4.6 and on Table 4-8. There are outstanding issues related to the characterization of hydrogeologic units within Parcel C.

Further characterization to demonstrate that 1) remedies within the A-aquifer will be remediated by the selected remedy and not recontaminated by COCs within the B-aquifer and/or F-WBZ and 2) unacceptable discharges to the Bay are not and will not occur should be added to the "Issues" for Parcel C. Additionally, successful implementation of the Deep F-WBZ Investigation for Remedial Unit-C4 (RU-C4) and the planned B-Aquifer investigation should be included in the "Follow-up Actions" for Parcel C.

- 17. Section 5.4.1.1 Remedy Implementation** - page 5-7 text states that, "[T]he Parcel D-1 RAMP (ChaduxTt, 2011a) states that groundwater samples will be collected semiannually until at least two years after property redevelopment to ensure redevelopment activities do not mobilize metals that could migrate into the [B]ay."

Specific Comment 17: Mobilization of metals should be considered due to potential groundwater rise, and monitoring should be reevaluated in this context for

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel D-1. Groundwater monitoring for metals at Parcel D-1 should be continued beyond pending redevelopment and evaluated for continued monitoring due to groundwater rise.

18. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris

Excavation, Consolidation, and/or Removal - page 6-13 text states, “[A]s part of the Phase 2 RA, the tidal and freshwater wetland areas were excavated and graded to the subgrade design as specified in the DBR [Design Basis Report] (ERRG, 2014).”

Specific Comment 18: The full magnitude and extent of crystalline lead oxide and soil contaminated with lead above the hot spot cleanup goal must be addressed with further soil and groundwater sampling. The “white crystalline lead oxide particles” were neither delineated nor removed during construction of the freshwater wetland where it may intersect the Experimental Ship Shielding Range. The description of “crystalline lead oxide particles” encountered during freshwater wetland excavation was removed from the Final Phase II Remedial Action Construction Summary Report; however, that information remains relevant because the vertical extent of lead has not been characterized. The left-in-place lead contamination above the hot spot cleanup goal poses risks to wildlife and may cause lead discharges to the freshwater wetland or the Bay.

19. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris

Excavation, Consolidation, and/or Removal, Table 6-5. Parcel E-2 Remedial Action Summary and Expected Outcomes, and Appendix C Site Inspection and Photograph Logs - summarizes the remedy implementation, expected outcomes, and provides the site inspection details and photos for Parcel E-2.

Specific Comment 19: Failure to implement portions of the remedy demonstrates that RAOs for ecological receptors have not been met in the short-term and deferred protectiveness is appropriate for Parcel E-2.

In accordance with the 2018 RAWP, the Navy committed to installing a turbidity curtain to prevent potential discharges of sediment into the Bay for activities conducted within 250 feet of the shoreline as detailed in Section 11.3, Erosion and Sediment Control Measures, and Appendix E, CERCLA Stormwater Plan (SWP) Section 3.3.1, Non-Stormwater Controls. RAWP construction activities within the tidal influence zone included 1) placement, grading, and compaction of final soil cover and 2) installation of drainage piping features at the freshwater wetlands and near the shoreline retaining wall.

A turbidity curtain was not deployed and evidence shows heavily disturbed soils throughout the shoreline area during the rainy season (see Appendix C, Site Inspection and Photograph Logs, Pages C-119 to C-126 – Site inspection photographs). Visibly turbid standing water along the shoreline revetment indicates a discharge of sediments to the Bay.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

20. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris Excavation, Consolidation, and/or Removal; and Below Ground Barrier (Slurry Walls) and Table 6-5. Parcel E-2 Remedial Action Summary and Expected Outcomes - The text and table provide details regarding the Upland Slurry Wall including RAOs and performance metrics.

Specific Comment 20: Per Regulatory Agencies' comments, water level and analytical data to demonstrate the Upland Slurry Wall is functioning as designed, as well as engineer certified as-built designs for the Upland Slurry Wall, as modified, need to be provided.

The Upland Slurry Wall was not constructed in accordance with the final design and specifications. The unplanned 220-feet long by 10-feet deep gap in the Upland Slurry Wall may result in unintended consequences to the groundwater flow system and thus unacceptable discharges to the freshwater wetlands and the Bay. The Navy has allowed several years of time lapse without adequately showing that unacceptable discharges of leachate generated from groundwater contact with the landfill waste are being mitigated by collecting and analyzing groundwater data from the existing monitoring wells as requested by the Regulatory Agencies. See Protectiveness Determination Comment 3 for additional details.

21. Section 6.6 Issues, Recommendations, and Follow-up Actions - provides a summary of issues, recommendations, and follow-up actions for Parcel UC-3.

Specific Comment 21: Issues, recommendations, and follow-up actions should not be limited to Parcel UC-3 as there are outstanding issues for Parcel E-2 as documented in Regulatory Agencies' correspondence. See Protectiveness Determination Comment 3 above for additional details.

The following should be added to "Issues" in Section 6.6: turbidity curtain not deployed during construction, stormwater best management practices/records keeping, Upland Slurry Wall not implemented as designed, as-built designs for changes to the Upland Slurry Wall not provided, methane mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.

The following "Recommendations and Follow-up Actions" should be added to Table 6-11: obtain as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California, monitor water levels and collect analytical data to demonstrate the Upland Slurry Wall is functioning as designed, collect soil samples in the vicinity of RCRA hazardous waste piles, collect soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated, revise compliance monitoring and mitigation plan for methane at the landfill, and provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

22. Appendix A, Section 1.0 Introduction - The Navy used the Department of Defense Regional Sea Level (DRSL, 2015) database to evaluate climate-related hazards, the most important of which is coastal flooding due to the site's proximity to the Bay. The DRSL considers scenarios for the years 2035, 2065, and 2100 and accounts for site specific adjustments, including vertical land movement.

Specific Comment 22a: Of the two timeframes evaluated (2035 and 2065), vertical land movement was only considered for the 2065 scenario. Explain why the Navy doesn't evaluate vertical land movement in the 2035 scenario.

Specific Comment 22b: Why isn't the 2100 scenario considered in this CRA?

Specific Comment 22c: Justify the use of guidance dated 2015 when more current and site-specific guidance and sea level rise projections are available, such as the Ocean Protection Council (OPC) State of California Sea Level Rise Guidance (2018) and OPC Sea-Level Rise Action Plan (2022).

23. Appendix A, Section 2.1, Sea Level Rise Projections - This section references a 30-year timeframe for a phased approach to plan for sea level rise, per the DTSC Draft Sea Level Rise Guidance (2023). Sea level rise projections of 1 foot for the year 2035, and 3.2 feet for 2065 were selected as the most conservative levels based on the DRSL report and are generally consistent with projections made in the OPC State of California Sea Level Rise Guidance which DTSC's Draft Guidance relies upon.

Specific Comment 23a: While 30 years is referenced as a minimum planning timeframe for a phased approach, this document fails to mention that applies to a remedy that provides a minimum of 30 years of protection against sea level rise and that DTSC "prefers full action taken now to address future impacts, but will consider a phased adaptation approach on a case-by-case basis."

Specific Comment 23b: The DTSC Draft Guidance states that "to ensure remedy resilience...evaluate projects based on sea level rise of 3.5 feet by 2050, and 6 feet by 2100," which are the recommended targets for minimum sea level rise planning and preparation, as presented in the OPC Sea-Level Rise Action Plan (2022).

24. Appendix A, Section 2.2 Seawater Inundation Impacts, Section 2.3 Storm Surges, Section 3.1 Groundwater Emergence, Figures 2-2, 2-3, 2-4, 2-5, 3-1, and 3-2 - the text states that "[F]igures 2-2 and 2-3 show the potential for permanent seawater inundation in 2035 and 2065, for the highest SLR scenarios in DRSL. Except for some marginal seawater encroachment at the edges of some parcels, no permanent seawater inundation is projected in any of the parcels during 2035 and 2065, under the highest SLR scenario."

Specific Comment 24: No details are provided regarding which specific remedies, remedy components, or COCs may be impacted by this inundation. These concerns apply to storm surges, transient inundation, and groundwater emergence. The text

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

should be revised to include which specific remedies, remedy components, and/or COCs will be impacted by permanent inundation, storm surges, or groundwater emergence. Additionally, figures should be revised to depict the locations of remedy and COC boundaries in relation to permanent inundation, storm surges, or groundwater emergence.

25. Section 2.3 Storm Surges, Figure 2-4 and Figure 2-5 - The transient inundation is shown to be extensive by 2035 as stated in the text, “[P]ortions of IR 7/18, and Parcels B-1, B-2, C, D-1, E, and the low-lying areas of E-2 are projected to be impacted.”

Specific Comment 25: Parcel specific evaluations should be initiated immediately due to concerns regarding transient inundation. Parcel D-1, Parcel E, and Parcel E-2 should be prioritized.

Eleven years is a short time to assess existing remedies for resilience and implement changes if needed to prevent exposures. Additionally, this prediction may not be appropriately conservative, as similar inundation to that depicted in Figure 2-4 for Parcel E in 2035 was observed on January 23, 2024, as documented in the Regional Water Board’s [email](#) to the Navy sent on January 30, 2024.

26. Appendix A, Section 3.1 Groundwater Emergence - The mean sea level (MSL) is used as the datum to determine permanent sea level rise induced groundwater table rise, as used by the City of Alameda (2022). A 1:1 ratio of groundwater table rise to MSL rise was considered, and the projected groundwater rise was added to the baseline.

Specific Comment 26a: In the Seawater Inundation Impacts section, mean high higher water (MHHW) is the standard elevation used as a baseline, and is the standard used in SLR mapping tools. SLR is added to the MHHW for evaluation for potential upland inundation. The MHHW should be applied instead of MSL for SLR calculations.

Specific Comment 26b: The reference to the City of Alameda report from 2022 uses data from a 2020 report on “The Response of the Shallow Groundwater and Contaminants to Sea Level Rise” for the City of Alameda. The authors of this report have published more recent, and more applicable data that should be applied to this CRA - “Shallow Groundwater Response to Sea-Level Rise (Alameda, Marin, San Francisco, and San Mateo Counties).” The more recent report with county-specific data should be used.

Specific Comment 26c: The above report does reference the MSL datum; however, this assessment fails to mention “the Bay water level elevation approximately one foot above the mean tide line was selected because fresh groundwater is usually found just above the mean tide line inland of coastal embayments.” The additional foot above MSL should be accounted for in these projections of groundwater emergence.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Specific Comment 26d: The CRA should explain how tidal fluctuations were accounted for in evaluating groundwater emergence, when “tidal fluctuations were observed from 150 to 500 feet inland from the [B]ay” within the A-Aquifer in both Parcels C and D, as stated in sections 4.2.1.2 and 5.2.1.2.

27. Appendix A, Section 5.1 Assessment Methodology - The vulnerability assessment evaluates whether impacts identified in the CRA indicate a new exposure, and whether site COCs (chlorinated volatile organic compounds [CVOCs], heavy metals, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) are identified as most likely to persist through 2035 and 2065. Potential vulnerabilities to both human and ecological receptors to heavy metals were identified due to groundwater emergence.

Specific Comment 27: Explain why the other COCs, i.e., CVOCs, PCBs, and PAHs, do not present a threat to human health and the environment as groundwater emerges.

28. Appendix A, Section 5.3.1 Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs, Page A-20 - Where previous treatment of a CVOC source left behind residual mass, additional treatment is planned. By 2035 any residual CVOCs in groundwater are projected to attenuate below remedial goals.

Specific Comment 28: This assumption should be reevaluated after additional treatment is performed, and well ahead of any projected groundwater emergence.

29. Appendix A, Section 5.3.4 Potential New Exposure to Subsurface Remedy Infrastructure to Saltwater Intrusion, Page A-21 - The groundwater at many locations is high in “saltwater components, such as chloride” indicating that saltwater intrusion is an ongoing phenomenon.

Specific Comment 29: A geochemical evaluation should be performed to evaluate how the site COCs detected in soil and groundwater will be affected by increasing salinity.

30. Appendix A, Section 5.3.6 Parcel E-2 Remedy Resiliency - The Parcel E-2 landfill has design elements which will make the remedy resilient to sea level rise through 2065, including the addition of a 9-foot shoreline revetment and 3-foot sea wall. The planned construction of fresh and tidal wetlands is designed to store and transmit seawater, rain, and groundwater to mitigate sea level rise effects.

Specific Comment 30: Consider the following in the remedy design and future monitoring and maintenance of the landfill: as groundwater becomes emergent, as it is projected in the CRA to do by 2035 with 1 foot of sea level rise, contaminated groundwater may enter the freshwater wetland impacting ecological receptors; the wetland may overflow its design footprint which can impact the nearby or surrounding protective landfill cap; and contaminated groundwater may overtop the

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

downgradient slurry wall. Additionally, it is unclear how/why passive design elements alone are considered enough for resilience when active solutions such as hydraulic control may be needed to prevent migration of contaminants.



San Francisco Bay Regional Water Quality Control Board

June 4, 2024

U.S. Department of the Navy
Attn: Michael Pound, BRAC Environmental Coordinator
NAVFAC BRAC PMO West
33000 Nixie Way, Bldg. 50, 2nd Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Subject: Regional Water Board Evaluation of May 2024 Navy Responses to Consolidated Agency Comments (Redline version dated May 27, 2024) for the November 2023 Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, San Francisco County

Dear Mr. Pound:

The San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has reviewed the subject responses to comments (RTCs) on the Draft Fifth Five-Year Review Report (Draft Five-Year Review) for the Former Hunters Point Naval Shipyard (HPNS).

After reviewing the RTCs, including the Navy's proposed changes for its protectiveness determination for Parcel B-2 for Installation Restoration (IR) Site 26 and Parcel C, our protectiveness determinations remain different from the Navy's for Parcel B-2 and Parcel E-2.

A summary of the Navy's protectiveness determination, including changes proposed since the November 2023 submittal of the Draft Five-Year Review, and the Regional Water Board's protectiveness determinations for Parcel B-2, Parcel C, and Parcel E-2 is provided below:

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-2	Protectiveness Deferred revised from Short-Term Protective	Not Protective
Parcel C	Protectiveness Deferred revised from Will Be Protective	Protectiveness Deferred
Parcel E-2	Will Be Protective	Protectiveness Deferred

ALEXIS STRAUSS HACKER, CHAIR | EILEEN M. WHITE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

U.S. Department of the Navy - 2 -
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

In addition to the changes to protectiveness determination there are several revisions that the Navy verbally committed to during April and May 2024 in person meetings with the Regulatory Agencies (Regional Water Board, Department of Toxic Substances Control (DTSC), and United States Environmental Protection Agency (USEPA)) that are not reflected in the Navy's RTCs. For example, it is important to revise the "Issues, Recommendations, and Follow-up Actions" sections and tables that reflect key milestones (i.e., primary documents) with timeframes and schedules in order to address Regulatory Agencies concerns related to protectiveness and/or remedy effectiveness and demonstrate that the Navy and Regulatory Agencies have a shared understanding of the path forward for the individual parcels. These timeframes and schedules can/will be used as a tracking tool until the next Five-Year Review.

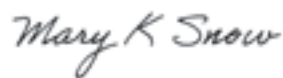
For transparency and as a matter of public record, we request that Regulatory Agencies evaluations of the Navy response to comments be included in the responsiveness summary of the Draft-Final Five-Year Review.

Due to the Navy's request for an expedited review of the RTCs, our attached comments focus on overarching concerns and are not exhaustive. We will continue to meet and work collaboratively with the Navy and our regulatory counterparts on the Five-Year Review and look forward to satisfactory resolution to our comments, so that we will be able to provide our concurrence on the Final Five-Year Review.

We defer to DTSC and USEPA regarding the radiological findings presented in the Draft Five-Year Review.

If you have any questions, please contact me at Mary.Snow@waterboards.ca.gov or (510) 622-2338.

Sincerely,



Mary Snow, P.G.
Engineering Geologist
Groundwater Protection Division

Attachment: Regional Water Board Comments

cc via email:

Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Michael Howley, DTSC, Michael.Howley@dtsc.ca.gov
Marienel Basiga, DTSC, Marienel.Basiga@dtsc.ca.gov
Ryan Casey, SFDPH, Ryan.Casey@sfdph.org
Andy Bain, USEPA, Bain.Andrew@epa.gov
Karen Ueno, USEPA, Ueno.Karen@epa.gov
Daniel Haskell, USEPA, Haskell.Daniel@epa.gov
Alex Valentine, Regional Water Board, Alexander.Valentine@Waterboards.ca.gov

U.S. Department of the Navy - 3 -
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Attachment

Regional Water Board New Comment

1. **New Comment 1:** There was an expectation that the redline RTC revisions would include all relevant revisions for the purpose of evaluating the Navy response to Regulatory Agencies' comments, e.g., revised text, tables, and figures; however, these details have been inconsistently provided or not included in the RTCs. The Regulatory Agencies have identified several issues, recommendations, and follow-up actions that are necessary to inform and/or demonstrate effectiveness of existing remedies or for remedies in the implementation phase. Specific milestones (i.e., primary documents), schedules, and timeframes should be specified and included in the Draft-Final Five-Year Review. Sections 3.6 (Parcel B-2), 4.6 (Parcel C), 5.6 (Parcel D), and 6.6 (Parcel E-2), as well as Tables 3-4, 4-8, 5-8, and 6-11 need to be updated to provide the specific details requested by the Regulatory Agencies.

Regional Water Board Evaluation of Navy Response to Comments

1. **Navy Response to Regional Water Board Protectiveness Determination**

Comment 1 (General): On page 1 of 71 the response states that "[T]he multiple lines of evidence presented in the Five-Year Review suggest the [mercury] concentrations observed in groundwater are unlikely to exceed [the Remedial Design Trigger Level (TL) of] 0.6 micrograms per liter (µg/L) in Bay (San Francisco Bay) surface water."

Page 2 of 71 the response goes on to state:

- a) Completion of source removal in 2008 via a time-critical removal action (TCRA; Insight, 2009)
- b) Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the [RAO] from 3 locations to 2 and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-6. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL [Hunters Point Groundwater Ambient Level].
- c) The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.
- d) Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 4 -

June 4, 2024

temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.

Regional Water Board Response 1a: We do not agree that the 2008 TCRA is a line of evidence supporting Navy's conclusion that mercury concentrations in groundwater are unlikely to exceed 0.6 µg/L in Bay water. The TCRA did not remove mercury contamination within bedrock. Five samples collected from the top of the underlying bedrock contained mercury concentrations that exceeded the soil remediation goal (RG) of 2.3 mg/kg, ranging from 5.9 to 15 mg/kg (Figure 4). All five samples with elevated mercury were located immediately adjacent to the Bay and up-gradient "sentinel" wells IR26MW49A and IR26MW71A. Incomplete removal of mercury from bedrock sustains the unacceptable mercury discharges to the Bay.

Regional Water Board Response 1b: Given that groundwater treatment was implemented 7.5 years ago and has failed to achieve the TL of 0.6 µg/L mercury in sentinel wells IR26MW49A and IR26MW71A, the only wells down-gradient of the source area, we do not agree that the remedy has been partially successful. Rather, it has failed.

Whereas our trend analysis indicates that mercury concentrations are likely decreasing in well IR26MW49A, it is nonetheless an order of magnitude greater than the TL; consequently, the cleanup timeframe at best will be many decades unless alternative remedial actions are completed. Mercury concentrations in well IR26MW71A are consistently greater than the RAO and stable, meaning that the cleanup timeframe for that plume area is unknown, and requires further evaluation.

Regional Water Board Response 1c: We do not agree that the Navy's assessment that the extent of mercury-contaminated groundwater is limited (and shrinking), because the extent of mercury contamination has not been characterized in the following directions:

- vertically in bedrock;
- east and south of Source Area 2 where five confirmation samples contained mercury concentrations above the soil RG; and
- in the San Francisco Bay.

Until the data gaps are addressed with additional investigation, the conclusions presented in the Five-Year review are not supported regarding the extent of the mercury plume.

Regional Water Board Response 1d: We disagree with the Navy's statement that "the groundwater is not representative of Bay water." The industry standard to evaluate freshwater-seawater mixing uses conductivity measurements. Based on our review of the 2022 conductivity measurements for nearshore wells IR26MW49A, IR26MW70A, and IR26MW71A, samples collected from these wells were

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 5 -

June 4, 2024

100 percent mixed (i.e., the water samples were essentially Bay water). Therefore, sample laboratory analytical data for these wells are more representative of ambient mercury concentrations in Bay surface water. Additionally, based on our comparison of the 2022 sampling times to the National Oceanic and Atmospheric Administration's tide predictions, sampling of the nearshore monitoring wells was not conducted with consideration of predicted tide levels and, consequently, samples were not collected at low tides when groundwater discharges to the Bay. Because samples collected from nearshore wells were likely mixed/diluted, no dilution factor should be applied to nearshore groundwater data.

Applying a standard Site Conceptual Model for groundwater discharge to surface water, mercury-contaminated groundwater migrates through and beneath the shoreline revetment during low tides and upwells into the Bay's transition zone¹. We are concerned that benthic organisms are exposed to harmful mercury concentrations.

Further, we are concerned that sample analytical results do not represent the mercury concentrations that the Bay's aquatic life is exposed to because samples are filtered in the field, removing mercury adsorbed on colloids in groundwater. When/where mercury discharges to the Bay with minimal dilution, including mercury in adsorbed phases, mercury concentrations may be greater than the reported concentrations in sentinel wells IR26MW49A and IR26MW71A. Consequently, we recommend that future water samples collected from all nearshore wells be analyzed for both dissolved and total mercury (no field filtration prior to analysis).

The Navy concluded that a "protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater." We disagree and as stated in our original comment, our protectiveness determination for Parcel B-2, IR Site 26 is "Not Protective."

Regional Water Board Response 1e: We disagree that a protectiveness determination cannot be made at this time. Elevated concentrations of mercury in groundwater exist in the sentinel wells, i.e., the points of compliance, representing unacceptable discharges to the Bay and evidence of exposure to the Bay's aquatic life. Consistent with USEPA guidance (2012), "Not Protective" is the appropriate protectiveness determination.

TL for Mercury in Groundwater. In response to the Regional Water Board's concerns regarding the validity of the mercury TL in groundwater, a link to the source document was provided. However, the link was not accessible and could not

¹ U.S. EPA, 2008. ECO Update/Ground Water Forum Issue Paper: Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessments. July. A transition zone is a region beneath the bottom of a surface-water body where conditions change from a groundwater dominated to surface-water dominated system within the substrate. The transition zone is an ecologically active area beneath the sediment/water interface where a variety of important ecological and physiochemical conditions and processes may occur.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 6 -

June 4, 2024

be evaluated. Therefore, we continue to maintain that the HGAL for mercury of 0.6 µg/L, which is the basis of the mercury TL and Remedial Action Objective, is not appropriately representative because:

- a. Influences from HPNS industrial activities are reflected in the data used.
- b. The HGAL is not specific to IR Site 26. Only 8 of 162 samples were collected from Parcel B-2, and it is likely that no sample was collected from IR Site 26.
- c. Mercury analytical results used to estimate the mercury HGAL were obtained over a period of about one year, which could not reflect the seasonal and medium- to long-term variability of mercury in groundwater.
- d. The data used to calculate the mercury HGAL were entirely comprised of non-detect concentrations or their derivatives.

2. Navy Response to Regional Water Board Protectiveness Determination

Comment 2 (General): Page 5 of 71 response states, “[N]avy acknowledges that while the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to “Protectiveness Deferred” until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ (fractured water-bearing zone) investigation for RU-C4 (Remedial Unit) and the B-Aquifer investigation.”

Page 7 of 71 revised text states, “[I]t is expected that these actions will take approximately 5 years to complete, at which time a protectiveness determination will be made.”

Regional Water Board Response 2: Although the response discusses the two documents that will fill the data gaps, i.e., Deep F-WBZ investigation for RU-C4 and the B-Aquifer investigation, the response lacks specificity regarding detailed timeframes and schedules for completion. The text should be revised to include timeframe/schedule details.

3. Navy Response to Regional Water Board Protectiveness Determination

Comment 3 (General): The RTC identifies concerns from Water Board Specific Comments 18, 19, 20 and 21 on Parcel E-2 and explains the protectiveness determination of “Will be Protective” is due to the remedy being currently under construction. The following summarizes Navy responses that do not adequately address Water Board concerns:

- **Upland Slurry Wall (USW) was not installed as designed.** The Navy states a work plan is under Agency review to evaluate USW performance and work is anticipated to begin in 2025.

U.S. Department of the Navy - 7 -
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

- **Turbidity curtain was not used during remedy construction.** The Navy indicates a turbidity curtain was used during Phase II remedial action construction work.
- **The Navy has not provided all stormwater best practices documentation.** The Navy states they have responded to the requests for stormwater records, specifically related to December 3, 2022, and January 11, 2023, Water Board correspondences.
- **There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future.** The Navy references post-over-excavation samples that were below the RG for lead-impacted soils.

Regional Water Board Response 3a: We disagree with the rationale for the Navy's protectiveness determination based on the completion of several remedy components that can be monitored for effectiveness/protectiveness. As described in the original Comment 3a, we have outlined the necessary data and information that can be collected to address longstanding agency concerns about the completed remedies.

We acknowledge that the Navy has agreed to address the following issues: collection of soil samples near Resource Conservation and Recovery Act (RCRA) hazardous waste piles and provide an addendum to the compliance monitoring and mitigation plan for methane at the landfill. However, several outstanding concerns have not been addressed by the RTCs as described in our Responses 3b to 3e below.

Regional Water Board Response 3b: Based on our understanding of the scope of work for the work plan to evaluate USW performance, the water level and analytical data to demonstrate USW is functioning as designed have not been included as requested by regulatory agencies. We have reiterated the importance of the data for evaluation of potential discharges using existing monitoring wells and have not received an adequate rationale for omitting this from forthcoming field investigations. Therefore, we cannot concur that the remedy "Will be Protective" because the necessary data to show remedy effectiveness/protectiveness is not being collected.

Regional Water Board Response 3c: The Navy references the turbidity curtain installed as part of the Phase II remedial action. However, as described in Specific Comment 19, our concerns are related to the 2018 Remedial Action Work Plan (RAWP), which covers activities of the Phase III remedial action and also required installation of a turbidity curtain. The RTC does not adequately address our comment and we find that a "Protectiveness Deferred" designation is more appropriate until the Navy can assure regulatory agencies that future work will comply with the site-specific Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Stormwater Plans.

U.S. Department of the Navy - 8 -
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Regional Water Board Response 3d: The RTC references Water Board correspondences from December 2022 and January 2023. As discussed in the May 2025 meetings, this does not represent the most recent correspondence and discussions regarding these concerns. On May 11, 2023, the Navy and regulatory agencies met to discuss unresolved issues with the records provided. Our concerns about significant lapses in the submitted best management practices (BMP) Inspection Reports were not addressed and the Navy contractor indicated they would submit additional documentation. We followed up with a May 23, 2023, email requesting the additional records and received no acknowledgement or response from the Navy nor its contractors. "Protectiveness Deferred" is consistent with our assessment that the previous five-year period showed inadequate documentation of stormwater BMPs and the CERCLA Stormwater Plans compliance.

Regional Water Board Response 3e: We maintain that lead-contaminated soil was not adequately characterized or removed during the over-excavations documented in Fieldwork Variance #5 (Appendix G of Phase 2 Remedial Action Construction Summary Report, RACSR). See Attachment 2 from the August 7, 2020, [Water Board letter](#) for unresolved concerns about the lead RG exceedances that appear to have been left-in-place. As described in follow on correspondences listed in General Comment 3, the collection of soil/groundwater samples is needed to evaluate whether remediation was adequately completed, and we cannot concur with the "Will be Protective" determination until there is commitment from the Navy to provide this data.

4. Navy Response to Regional Water Board Protectiveness Determination

Comment 4 (General): The Water Board stated that there is insufficient data from each parcel to demonstrate that existing remedies account for per- and polyfluoroalkyl substances (PFAS) transport and containment.

The Navy response states that site remedies should only be evaluated for protectiveness if it is confirmed that they do not address current or future exposure to PFAS. In addition, the response states that it is not appropriate to evaluate existing site remedies prior to initiation of the PFAS remedial investigation.

The response identifies concerns from Water Board Specific Comment 4 on PFAS and explains that protectiveness determinations for existing remedies are not affected because existing remedies already account for PFAS in their design and implementation. According to the Navy, these existing protections are accounted for because:

- Groundwater is not suitable for use as drinking water within the A-aquifer.
- Current durable covers and institutional controls restrict human and terrestrial ecological receptor exposure to all site soils.

Only one site-specific remedy was evaluated in the RTC and provided in the text revision, the near-shore slurry wall located at Parcel E-2. The Navy described that

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 9 -

June 4, 2024

the cement-bentonite mixture of the wall is expected to inhibit PFAS based on how it inhibits volatile organic compounds (VOCs).

Published ecological screening values from Argonne (2021) were also provided in the text as a line of evidence supporting no imminent CERCLA-related risk at HPNS.

Regional Water Board Response 4a: The lines of evidence provided supporting no imminent CERCLA-related risk are insufficient. Therefore, our protectiveness determination with respect to PFAS is "Protectiveness Deferred" Basewide.

The Regional Water Board has not provided a Basewide exemption for groundwater as a drinking water source, while groundwater at or near the site is not currently used as a drinking water source (i.e., for comparison to the USEPA National Drinking Water Regulations (NDWR) for six primary PFAS compounds), risk for ecological receptors and therefore, recreational users, to PFAS in contaminated surface water and groundwater is not accounted for or established in this response. The Argonne ecological screening values provided are on the order of a wide range, up to over three orders of magnitude for perfluorooctanoic acid (PFOA). These values also do not represent established site-specific risk criteria as agreed to by the Federal Facility Agreement parties.

Further, there is no evidence that the durable covers currently in-place can prevent PFAS from leaching from soil to groundwater or surface water at the site, which is a potential migration pathway. Considering the highly mobile nature of PFAS compounds, these pathways likely result in PFAS discharge to Bay waters and exposure to offshore receptors. The risk for exposure to these receptors has yet to be addressed by site remedies and demonstrate that protectiveness with regard to site PFAS has not been established.

Regional Water Board Response 4b: The response that the properties of the near-shore slurry wall at Parcel E-2 (i.e. a cement-bentonite mixture) are capable of inhibiting PFAS transport in groundwater, and groundwater to surface water, is not informed nor substantiated.

PFOA detected in groundwater upgradient of this location (i.e. 18 micrograms per liter at IR01MW60A) is multiple orders of magnitude more than its NDWR of 4 nanograms per liter. This indicates that there is a significant PFAS plume present within groundwater at Parcel E-2. No data was provided to support that this site remedy, which was not designed to mitigate PFAS releases in groundwater, is able to prevent a PFAS plume of this magnitude from migrating in groundwater.

PFAS compounds are known to be considerably more mobile and pervasive compared to VOCs, so it is unclear how this remedy can inhibit this contamination. PFAS compounds are also considerably more toxic at minor concentrations compared to VOCs (e.g. compared to tetrachloroethene federal maximum contaminant level of 5 *micrograms* per liter), so it should be expected that PFAS are more difficult to contain with the same remedy. In addition, it is also unclear how the

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 10 -

June 4, 2024

physical extent of the remedy (i.e. depth and lateral extent) was designed to mitigate this high concentration PFAS plume.

Further, no downgradient data, either in surface water or groundwater, exist to support that this remedy is currently functioning to inhibit PFAS migration.

Regional Water Board Response 4c: Based on the information provided above, we disagree with the rationale for the Navy's protectiveness determination with respect to PFAS. As stated in USEPA's April 3, 2024, RPM Bulletin 2024-01 (*Considerations When Reviewing PFAS in Five-Year Reviews*):

To build a case to support the analysis of whether the newly identified contaminants could impact the protectiveness of the existing remedy, the FYR should incorporate what is known and not known about the contamination, and whether existing remedies may fully or partially mitigate risks.

Because there is insufficient data available at this time, prior to the initiation of the remedial investigation, a Protectiveness Deferred determination should be assigned with respect to site PFAS.

Further, the June 2011 Navy policy which was provided does not substantiate the statement in the response that "an emerging contaminant should only affect a protectiveness determination if the emerging contaminant is present at a concentration posing a potential unacceptable risk at the site and the existing remedy does not address the current or future exposure to the emerging contaminant." The June 2011 policy only refers to investigation of the emerging contaminant itself and does not reference initiation of remedial investigations precluding assignment of protectiveness determinations. Rather, this policy states the investigation of an emerging contaminant should proceed based on whether "the contaminant may call into question the protectiveness of either the remedy or the RAOs."

Therefore, our protectiveness determination with respect to PFAS is "Protectiveness Deferred" Basewide

5. Navy Response to Regional Water Board Protectiveness Determination

Comment 5 (General): The RTC identifies concerns from Water Board Specific Comments 17, 24, 25, 28, and 29 on climate vulnerability and explains that protectiveness determinations can be better evaluated with site-specific studies. The following parcels were identified for site-specific studies based on threat from sea level rise: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel D-1, Parcel G, Parcel E, and Parcel E-2. Further, the RTC indicates that the Navy will commit to holding a prioritization meeting with the members of the Federal Facility Agreement in November 2024.

Regional Water Board Response 5: The Water Board generally concurs with these recommendations; however, we request the following response be addressed.

U.S. Department of the Navy - 11 -
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Describe why Parcel UC-1, Parcel UC-2, Parcel UC-3, and Parcel D-2 were not included in the list of site-specific studies to address climate vulnerability. It is our understanding that while these parcels have less prioritization compared to other, more vulnerable site locations, they are still susceptible to climate vulnerability (e.g. transient inundation, groundwater rise, etc.) and should also be included for site-specific evaluations.

Additionally, Site-specific climate vulnerability studies should be discussed in and presented on in parcel specific sections and tables for "Issues, Recommendations, and Follow-up Actions."

Regional Water Board Evaluation of Navy Response to Specific Comments

1. **Navy Response to Specific Comment 3:** The Navy provides an affirmative response to the Regional Water Boards request for consistent nomenclature for Installation Restoration (IR) Site numbering.

Regional Water Board Response Specific Comment 3: could not be evaluated without the revisited document.

2. **Navy Response to Specific Comment 6a:** Proposed text revision "Based on the negligible change in historical survey monument elevations, the next round of settlement monument surveys will be in 2024."

Regional Water Board Response Specific Comment 6a: Consider the defining "negligible change" in the text e.g., "negligible change (i.e., less than 0.1 foot)."

3. **Navy Response to Specific Comments 7 and 11:** The Navy disagrees with the Regional Water Boards request for discussion and depiction of flow directions and flow lines.

Regional Water Board Response Specific Comments 7 and 11: Response does not address the request with respect to the addition of a discussion of groundwater flow or request for depiction for groundwater flow paths on a figure. These requests will assist the public in understanding the relationship between groundwater, surface water, and contamination at the Parcels.

4. **Navy Response to Specific Comment 8, 9 and 10:** The Navy provided responses to Regional Water Board comments regarding Parcel B-2, IR Site-26.

Regional Water Board Response Specific Comment 8, 9, and 10: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 1 (General) above.

5. **Navy Response to Specific Comment 14:** The Navy provided a response to the Regional Water Boards comments regarding Operations and Maintenance (O&M) strategies to address erosional features at Parcel C.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

- 12 -

June 4, 2024

Regional Water Board Response Specific Comment 14: The text should be updated to notify the public of the plan and include schedule timeframes for addressing these erosional features.

6. **Navy Response to Specific Comment 15:** The Navy provided responses to Regional Water Board comments regarding Parcel C.

Regional Water Board Response Specific Comment 15: The response does not address the Regional Water Boards comment; the data gaps will persist until the proposed investigations are complete therefore the response to Question B remains uncertain.

7. **Navy Response to Specific Comment 18, 19, 20, and 21:** The Navy provided responses to Regional Water Board comments regarding Parcel E-2.

Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.

8. **Navy Response to Specific Comment 22c (Specific):** The RTC states that the Department of Defense (DoD) plans to update the DoD Regional Sea Level (DRSL) guidance periodically.

Regional Water Board Response Specific Comment 22c: Please clarify whether there is an associated date or timeline for this updated DRSL guidance.

9. **Navy Response to Specific Comment 23b:** The RTC states that the DRSL projections are now more conservative based on consistency with the upcoming Ocean Protection Council (OPC) State of California Sea Level Rise Guidance (2024).

Regional Water Board Response Specific Comment 23b: Note the OPC State of California Sea-Level Rise Action Plan (2022) lists 3.5 feet (ft) and 6 ft of sea level rise as target planning levels for resiliency by 2050 and 2100, respectively. Therefore, the DRSL projections should be benchmarked, or as close as possible, to the above Sea-Level Rise Action Plan criteria to factor in the need for a 2100 planning scenario, which is consistent with the current DTSC guidance.



San Francisco Bay Regional Water Quality Control Board

July 18, 2024

U.S. Department of the Navy
Attn: Michael Pound, BRAC Environmental Coordinator
NAVFAC BRAC PMO West
33000 Nixie Way, Bldg. 50, 2nd Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Subject: Regional Water Board Comments on the redline June 2024 Draft-Final Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, San Francisco County

Dear Mr. Pound:

The San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has reviewed the subject redline Draft-Final Fifth Five-Year Review Report (Draft-Final Five-Year Review) for the Former Hunters Point Naval Shipyard (HPNS).

After reviewing the Draft-Final Five-Year Review, including the Navy's proposed changes for its protectiveness determination for Parcel B-2 for Installation Restoration (IR) Site 26 and Parcel C, our protectiveness determinations remain different from the Navy's for Parcel B-2 and Parcel E-2.

A summary of the differences between the Navy's protectiveness determination, including changes proposed since the November 2023 submittal of the Draft Five-Year Review, and the Regional Water Board's protectiveness determinations for Parcel B-2 and Parcel E-2 is provided below:

Parcel	Navy's Protectiveness Determination	Regional Water Board's Protectiveness Determination
Parcel B-2	Protectiveness Deferred	Not Protective
Parcel E-2	Will Be Protective	Protectiveness Deferred

Additionally, as discussed in our April 30 and June 4, 2024, letters (attached), the lines of evidence are not sufficient to demonstrate that there is no risk to human or ecological receptors due to the presence of per- and polyfluoroalkyl substances (PFAS).

ALEXIS STRAUSS HACKER, CHAIR | EILEEN M. WHITE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

U.S. Department of the Navy
Comments on the Draft-Final Fifth Five-Year Review

July 18, 2024

Therefore, consistent with USEPA *Memorandum: Clarifying the Use of Protectiveness Determinations for CERCLA [Comprehensive, Environmental Response, Compensation, and Liability Act] Five-Year Reviews (2012)* and USEPA *RPM Bulletin 2024-01 Considerations When Reviewing PFAS in Five-Year Reviews (2024)*, our protectiveness determination with respect to PFAS is "Protectiveness Deferred" Basewide.

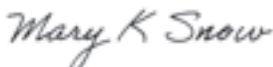
In our June 4, 2024, letter (attached), for transparency and as a matter of public record, we requested that Regulatory Agencies evaluations of the Navy response to comments be included in the responsiveness summary of the Draft-Final Five-Year Review; however, this was not done. Thus, we reiterate this request.

We will continue to meet and work collaboratively with the Navy and our regulatory counterparts on the Five-Year Review and look forward to satisfactory resolution to our comments, so that we will be able to provide our concurrence on the Final Five-Year Review.

We defer to DTSC and USEPA regarding the radiological findings presented in the Draft-Final Five-Year Review.

If you have any questions, please contact me at Mary.Snow@waterboards.ca.gov or (510) 622-2338.

Sincerely,



Mary Snow, P.G.
Engineering Geologist
Groundwater Protection Division

Attachments: Regional Water Board Comment Letters dated April 30 and June 4, 2024.

Copy to via email:

Wilson Doctor, Navy, Wilson.E.Doctor.civ@us.navy.mil

Michael Howley, DTSC, Michael.Howley@dtsc.ca.gov

Mariene Basiga, DTSC, MarieneL.Basiga@dtsc.ca.gov

Ryan Casey, SFDPH, Ryan.Casey@sfdph.org

Andy Bain, USEPA, Bain.Andrew@epa.gov

Karen Ueno, USEPA, Ueno.Karen@epa.gov

Daniel Haskell, USEPA, Haskell.Daniel@epa.gov

Alex Valentine, Regional Water Board, Alexander.Valentine@Waterboards.ca.gov

Attachment 1



San Francisco Bay Regional Water Quality Control Board

April 30, 2024

U.S. Department of the Navy
 Attn: Michael Pound, BRAC Environmental Coordinator
 NAVFAC BRAC PMO West
 33000 Nixie Way, Bldg. 50, 2nd Floor
 San Diego, CA 92147
 Sent via email only: michael.j.pound.civ@us.navy.mil

Subject: Regional Water Board Comments on November 2023 Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, San Francisco County

Dear Mr. Pound:

The San Francisco Bay Regional Water Board (Regional Water Board) has reviewed the subject Draft Fifth Five-Year Review Report (Draft Five-Year Review) for the Former Hunters Point Naval Shipyard (HPNS).

Our preliminary protectiveness determinations are different from the Navy's for Parcel B-2, Parcel C, and Parcel E-2; and we are requesting additional details or supporting information to be able to concur with the Navy's determination for all parcels due to the climate change vulnerabilities and/or presence of per- and polyfluoroalkyl substances (PFAS) as summarized in the table below:

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-2*	Short-Term Protective	Not Protective
Parcel C*	Short-Term Protective	Protectiveness Deferred
Parcel E-2*	Will Be Protective	Protectiveness Deferred
Installation Restoration Site 07/18	Protective	Requesting additional details/information to support Navy's position

ALEXIS STRAUSS HACKER, CHAIR | EILEEN M. WHITE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-1 Parcel C Parcel UC-2 Parcel D-1 Parcel UC-1 Parcel D-2 Parcel G Parcel UC-3	Short-Term Protective	Requesting additional details/information to support Navy's position
Parcel E	Will be Protective	Requesting additional details/information to support Navy's position

* For Parcel B-2, Parcel C, and Parcel E-2, in addition to differing positions based on our technical assessment of the remedies, we are requesting additional details/information to support Navy's position due to the climate change vulnerabilities and/or presence of PFAS.

We defer to Department of Toxic Substances Control (DTSC) and United States Environmental Protection Agency (USEPA) regarding the radiological findings presented in the Draft Five-Year Review.

We will continue to meet and work collaboratively with the Navy and our regulatory counterparts and look forward to satisfactory resolution to our attached comments, so that we will be able to provide our concurrence on the Final Five-Year Review.

If you have any questions, please contact me at Mary.Snow@waterboards.ca.gov or (510) 622-2338.

Sincerely,



Mary Snow, P.G.
Remedial Project Manager
Groundwater Protection Division

Attachment: Regional Water Board Comments

Copy to:

Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Michael Howley, DTSC, Michael.Howley@dtsc.ca.gov
Ryan Casey, SFDPH, Ryan.Casey@sfdph.org
Andy Bain, USEPA, Bain.Andrew@epa.gov

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Attachment

Regional Water Board Protectiveness Determination Comments

1. **Comment 1a:** We do not agree with the protectiveness statement provided in the Draft Five-Year Review for Parcel B-2, Installation Restoration (IR) Site 26. The Regional Water Board's preliminary protectiveness determination for Parcel B-2, IR Site 26 is "Not Protective." This determination is consistent with USEPA guidance (2012) because for mercury concentrations in groundwater the "[M]igration of contaminants is uncontrolled and poses an unacceptable risk to human health and the environment; or potential or actual exposure is clearly present or there is evidence of exposure."

Comment 1b: The remedy at Parcel B-2, IR Site 26 is not protective because elevated mercury concentrations in groundwater may be discharging to San Francisco Bay (Bay). Therefore, development of a new primary document work plan focused on alternative treatments and treatment methodologies is warranted as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing this work plan with appropriate implementation timelines that are agreeable to the Federal Facility Agreement (FFA) signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' (i.e., USEPA, Department of Toxic Substances Control (DTSC), and Regional Water Board) comments and concerns regarding the status of the remedy for Parcel B-2, IR Site 26. The remedy at Parcel B-2 includes soil excavation, installation of a durable cover, in situ stabilization of mercury in groundwater, monitoring, and institutional controls.

The Navy's "Short-Term Protective" determination for Parcel B-2 IR Site 26 groundwater is not supported due to elevated concentrations of mercury in groundwater, as identified in the following Regulatory Agencies' correspondence: Tri-Agency [Letter](#) dated August 20, 2021, Tri-Agency [Letter](#) dated November 23, 2021, DTSC Note to File - [Non-Concurrence](#) dated December 23, 2021, and Regional Water Board [Letter](#) dated March 14, 2022.

Specifically, after a three-year performance and post-treatment monitoring period, the remedial action, in situ stabilization using the reagent Metafix, has failed to reduce mercury concentrations in groundwater to below 0.6 micrograms per liter (µg/L), the Parcel B Remedial Design (RD) trigger level. Elevated concentrations of mercury in groundwater are in "sentinel" wells, representing a discharge to the Bay. Additionally, the Regional Water Board's concerns regarding the validity of the development of the trigger concentration for mercury have not been addressed by the Navy.

2. **Comment 2a:** We do not agree with the Navy's protectiveness determination for Parcel C. The Regional Water Board's preliminary protectiveness determination for

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel C is “Protectiveness Deferred.” This determination is consistent with USEPA guidance (2012) because it is unknown if the response should be “yes” to “Question B - Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?”

Comment 2b: A protectiveness determination of the remedy at Parcel C cannot be made at this time until further information is obtained. Further information will be obtained upon successful implementation of the *Deep Fractured Water Bearing Zone (F-WBZ) Investigation for Remedial Unit-C4 (RU-C4)* and the planned B-aquifer investigation, at which time a protectiveness determination can likely be made. Our expectation is that the Draft-Final Five-Year Review will specify these documents as “follow-up actions” and commit to implementation timelines that are agreeable to the FFA signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies’ comments and concerns regarding the status of the remedy for Parcel C. The remedy at Parcel C includes soil excavation, installation of a durable cover, soil vapor extraction, in situ treatment of groundwater, monitoring, and institutional controls. The Navy’s “Short-Term Protective” determination for Parcel C is not supported for groundwater due to data gaps in the understanding of the communication/connections between the hydrologic units within Parcel C, as documented in the following Regulatory Agencies’ correspondence: Joint-Agency [Letter](#) (USEPA) dated July 30, 2021, Joint-Agency [Letter](#) (USEPA) dated September 17, 2021, and Tri-Agency [Letter](#) dated May 24, 2022.

Specifically, the connection and communication between hydrogeologic units within Parcel C is not fully understood; therefore, further characterization is required to demonstrate that 1) remedies within the A-aquifer will be effective and not recontaminated by chemicals of concern (COCs) within the B-aquifer and/or Deep F-WBZ and 2) unacceptable discharges to the Bay are not and will not occur.

3. **Comment 3a:** We do not agree with the Navy’s protectiveness determination for Parcel E-2. The Regional Water Board’s preliminary protectiveness determination for Parcel E-2 is “Protectiveness Deferred” because the remedy components were not implemented (turbidity curtain) or constructed as designed (Upland Slurry Wall). There are data gaps regarding lead contamination within the wetland, concerns regarding stormwater management practices during construction, questions regarding management of hazardous waste piles, and ongoing concerns regarding the management and monitoring of methane in soil gas at Parcel E-2.

Comment 3b: A protectiveness determination of the remedy at Parcel E-2 cannot be made at this time until further information is obtained. Further information and data should include:

- Obtaining as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- Monitoring water levels and collecting analytical data to demonstrate the Upland Slurry Wall is functioning as designed.
- Collection of soil samples in the vicinity of Resource Conservation and Recovery Act (RCRA) hazardous waste piles.
- Collection of soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated.
- Provide a revised compliance monitoring and mitigation plan for methane at the landfill.
- Provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2.

These actions should be prioritized by the FFA Remedial Project Managers and/or based on imminent exposure threats. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing the appropriate primary documents to address these concerns and include implementation timelines that are agreeable to the FFA signatories.

The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' comments and concerns regarding the status of the remedy for Parcel E-2. The remedy at Parcel E-2 includes soil excavation, installation of a durable cover, installation of belowground barriers, landfill gas monitoring, collection, and treatment, long-term monitoring of groundwater, radiological screening and remediation, and institutional controls.

The Navy's "Will be Protective" determination for Parcel E-2 is not supported due to concern regarding remedy implementation and site characterization, as documented in the following Regulatory Agencies' correspondence: Regional Water Board [Letter](#) dated March 6, 2023, Regional Water Board [Letter](#) dated August 7, 2020, Regional Water Board [Letter](#) dated December 15, 2020, Joint-Agency [Letter](#) dated March 16, 2021, Joint-Agency [Letter](#) dated April 28, 2021, Tri-Agency [Letter](#) dated May 5, 2022, Regional Water Board [Letter](#) dated August 17, 2022, Tri-Agency [Letter](#) dated December 8, 2022, Regional Water Board [Letter](#) dated December 13, 2022, and Joint-Agency [Letter](#) (USEPA) dated July 18, 2023.

Although it is understood that the remedy has not been fully implemented, the Navy has not addressed Regulatory Agencies' concerns regarding: lack of deployment of turbidity curtain during construction, stormwater best management practices/records keeping, Upland Slurry Wall not implemented as designed, request for as-built designs for changes to the Upland Slurry Wall, methane mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- 4. Comment 4:** The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the presence of PFAS, a class of chemical compounds that are considered emerging contaminants. The Navy must provide sufficient additional details to demonstrate that the protectiveness determinations are appropriate for each parcel. Otherwise, the determination should be “Protectiveness Deferred” with respect to PFAS.

It is understood that PFAS investigations are ongoing. However, the findings in the *Site Inspection for Basewide Investigation of Per- and Polyfluoroalkyl Substances* (Liberty 2023) determined that a remedial investigation is necessary for all parcels for both soil and groundwater, therefore the extent of PFAS contamination is currently unknown. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and Parcel UC-3.

The Navy must provide additional justification for their responses to protectiveness Questions A, B, and C (USEPA [2001](#) and [2012](#)) with data and information that can demonstrate that remedies that were not specifically designed to prevent exposures to PFAS contamination are protective of human health and the environment. Additional supporting information could include but is not limited to exposure assumptions for PFAS, a discussion of remedy design features that can/will prevent exposures to PFAS, and figures showing the distribution of PFAS concentrations in context of remedy boundaries.

- 5. Comment 5a:** With respect to protectiveness determinations, additional justification/evaluations for climate vulnerability should be presented in the Draft-Final Five-Year Review. Media of concern and associated exposure assumptions should be considered in the context of existing Institutional Controls and Engineering Controls or other remedy components to support the Navy’s protectiveness statements. Otherwise, a “Protectiveness Deferred” determination may be most appropriate in the context of climate vulnerability.

Comment 5b: There is an urgency to conduct parcel-specific climate vulnerability assessments at all parcels as soon as practical, with a prioritization of Parcel D-1, Parcel E, and Parcel E-2.

The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the findings in the Climate Resilience Assessment (CRA), Appendix A, and the site-specific data and information collected during the reporting period.

The CRA is a screening-level assessment of climate-related hazards, their potential impacts, and whether vulnerabilities were identified that may impact the protectiveness of the remedies at HPNS.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

We acknowledge that this CRA is a screening or baseline assessment, but additional parcel-specific evaluation is required. Examples of the urgency for additional work include but are not limited to:

- Transient inundation is likely to occur within the next 11 years at Parcel D-1, Parcel E, and Parcel E-2.
- 11 years may not leave adequate time for planning if remedies require modifications to become or remain protective.
- As documented in Regional Water Board (M. Snow) [email](#) dated January 30, 2024, flooding/standing water observed January 23, 2024, at Parcel E may demonstrate that transient inundation predictions for 2035 are not conservative enough.
- Observance of “sinkholes” attributed to tidal waters and subsidence near Buildings 205, 207, and 208 at Parcel C.
- COCs and chemicals of potential concern (COPCs) in soil not currently saturated may be subject to mobilization with a small rise in groundwater elevation.

Parcel-specific assessments should be conducted at all parcels. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and UC-3. However, Parcel D-1, Parcel E, and Parcel E-2 should be prioritized.

Regional Water Board Specific Comments

- 1. Five Year Review Summary Form, Page XVII, and Section 1.1 Purpose and Approach, Section 2.1 Site Interviews** - page 1.1 text states, “[T]he Five-Year Review included a document and data review, required visual site inspections, and interviews.”

Specific Comment 1: The Regulatory Agency site inspection was not conducted until after the Draft Five-Year Review was submitted. Also, it is unclear why interviews were limited to Navy contractors and were not conducted with Navy personnel, Regulatory Agencies, local authorities, including San Francisco Department of Public Health (SFDPH), nearest neighbors, and/or community members; this is inconsistent with USEPA guidance ([2001](#)).

The form should be updated to include January 23, 2024, the date of the Regulatory Agencies’ Fifth Five-Year Review site inspection. Justification for why interviews were limited to Navy contractors should be provided. Also, interviews should be conducted with the Navy personnel, Regulatory Agencies, SFDPH, nearest neighbors, and/or community members and provided in the Draft-Final Five-Year Review.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

- 2. Five Year Review Summary Form, Page XVII; Section 1.1 Purpose and Approach, and Section 2.6, Next Five-Year Review** - page 1-1 text states, “The triggering action for statutory Five-Year Reviews at HPNS was the date of mobilization for the remedial action (RA) activities at Parcel B, which was July 8, 1998. The triggering action for this Fifth Five-Year Review is the signature of the Fourth Five-Year Review, July 31, 2019 (Navy, 2019)”. Section 2.6, page 2-2 text states, “[T]he next Five-Year Review is due to be finalized 5 years from the signature of this Five-Year Review, which is anticipated to be in 2029.”

Specific Comment 2: Per USEPA letter dated November 16, 2023, the Sixth Five-Year Review is due November 8, 2028; therefore, the Draft-Final Five-Year Review should be revised accordingly.

- 3. Section 1.2 Environmental Restoration Program, and Figure 1-2 Installation Restoration Sites** - page 1-2 the text states “In most cases, IR sites were identified by a two-digit number (for example, IR-02),” but depicted as single digits on Figure 1-2 for IR sites 1 through 9 instead of 01 through 09.

Specific Comment 3: For clarity two-digit nomenclature for IR sites 01 through 09 should be used throughout the Five-Year Review.

- 4. Section 1.4.1 Per- and Polyfluoroalkyl Substances** - page 1-7 text states “Because investigation of PFAS is ongoing and it has not yet been determined whether PFAS pose unacceptable risk that requires RA [Remedial Action], and because a remedy for PFAS has not yet been determined, a protectiveness determination cannot be made.”

Specific Comment 4: This is not consistent with USEPA Guidance (September [2012](#)) regarding protectiveness statements for emerging contaminants. Per USEPA Guidance (September [2012](#)) for emerging contaminants protectiveness is deferred. Unless parcel specific evaluations of existing PFAS concentrations, likely data gaps, media of concern, and exposure assumptions are conducted in the context of existing Institutional Controls, Engineering Controls, or other remedy components to support the Navy’s protectiveness statements, then “Deferred Protectiveness” is appropriate for sites with PFAS detections. See Protectiveness Determination Comment 4 above.

- 5. Section 1.4.3.1 Progress Since the Fourth Five-Year Review** - Discussion in this section was limited to the radiological retesting.

Specific Comment 5: This section should be consistent with the issues, recommendations, and other findings as presented in the last Five-Year Review and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

not limited to radiological retesting. The *Final Fourth Five-Year Review* (2019) “Issues, Recommendation and Other Findings” included the following items:

- SVE [soil vapor extraction] implementation in Parcels B-1 and C is reducing source mass, but with limited effectiveness due to diffusion-limited conditions in the subsurface.
- The Regulatory Agencies do not agree with the Navy’s risk assessment methodology used to reduce the ARICs [areas requiring institutional controls] for VOC [volatile organic compounds] vapors.
- The Navy has determined that a significant portion of the radiological survey and remediation work completed to date was not reliable because of manipulation and/or falsification of data by one of its radiological contractors. A long-term protectiveness evaluation of the radiological RGs [remediation goals] has not yet been completed for this fourth Five-Year Review, and it is currently not known if the RAOs for radionuclides have been achieved in Parcels B-1, B-2, C, D-1, D-2, G, E, UC-1, UC-2, and UC-3.

Specific updates for the SVE implementation at Parcels B-1 and C, as well as the status of the disagreement regarding the Navy’s risk assessment methodology used to reduce the ARICs for VOC vapors from the Fourth Five-Year Review, including milestones and timelines, should be provided in the Draft-Final Fifth Five-Year Review.

- 6. Section 3.4.1.2 Remedy Operations and Maintenance, Durable Cover Maintenance (IR 07/18), 3.4.2.2 Remedy Operations and Maintenance, Durable Cover (B-1); Section 3.4.3.2 Remedy Operations and Maintenance, Durable Cover (B-2), Section 4.4.1.2 Remedy Operations and Maintenance, Durable Cover (Parcel C), and Section 6.4.2.2 Remedy Operations and Maintenance, Durable Cover (E-2) -** provides information regarding remedy operations and maintenance for the durable covers and monument surveys.

Specific Comment 6a: The 2023 monument surveys results were not provided, and the frequency of monument surveys is not specified in the Draft Five-Year Review. Provide the 2023 monument survey results in the Draft-Final Five-Year Review.

Specific Comment 6b: Provide the frequency of the monument surveys by parcel, i.e., IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, and Parcel E-2.

Specific Comment 6c: Consider increasing the frequency of monument surveys in support of evaluating impacts on the remedies due to sea level rise/groundwater rise.

- 7. Section 3.4.1.1 Remedy Implementation -** page 3-7 text states “[S]ince at least 2009, concentrations of COCs and ROPCs [radionuclides of potential concern] have remained under their TLs [trigger levels], except for lead in September 2017 and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

March 2022 (TRWB, 2023). Concentrations of lead exceeded the TL but were within the same order of magnitude as the TL (14.44 µg/L) at two locations (23 and 23.9 µg/L) in March 2022 and were below laboratory detection limits during the September 2022 event (Appendix E, Figure 3-5)."

Specific Comment 7: The Draft-Final Five-Year Review should provide a discussion of groundwater flow directions and include groundwater flow path depictions on Figure 3-5, and trend analysis for lead concentrations in wells IR07MW24A and IR07MW26A. With the fluctuating lead concentrations in groundwater and the lack of sentinel wells between the elevated concentrations in groundwater and the Bay, it is unclear if the remedy is adequately protective of ecological receptors and that lead is not being discharged to the Bay.

- 8. Section 3.5.1, Question A: Is the Remedy Functioning as Intended by the Decision Document? and Section 3.5.1.3, Parcel B-2** - with respect to IR Site 26, the Navy responded "yes" to Question A.

Specific Comment 8: A "yes" response is inconsistent with the mercury exceedances in groundwater, as well as not adequately reflecting regulatory comments and concerns since the Forth Five-Year Review. The Draft-Final Fifth Five-Year Review should be revised to respond "No" to Question A. See Protectiveness Determination Comment 1 above.

- 9. Section 3.5.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?** - with respect to IR Site 26, the Navy responded "yes" to Question B.

Specific Comment 9: It is not clear if the cleanup levels associated with mercury in groundwater are still valid. As the Navy has not responded to the Regional Water Board [Letter](#) dated March 14, 2022, regarding the development of the 0.6 µg/L as the Parcel B RD trigger level for mercury. The response to Question B may be "no" and the Navy should provide a response to the Regional Water Board's concerns with respect to the mercury trigger level to justify that the RAOs are still valid. See Protectiveness Determination Comment 1 above for additional details.

- 10. Section 3.6 Issues, Recommendations, and Follow-up Actions and Table 3-8 Parcel B Issues, Recommendations, and Follow-up Actions** - provides a summary of the Issues, Recommendations, and Follow-up Actions for Parcel B, including, Parcel B-2 IR Site 26.

Specific Comment 10: There are outstanding Regulatory Agencies' comments and recommendations related to the remedy at Parcel B-2 IR Site 26 that were not included in this section or on this table, as detailed in the Protectiveness Determination Comment 1 above.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

The following issues need to be included in this section: 1) Metafix has failed to reduce mercury in groundwater to concentrations below the Parcel B RD trigger level and 2) elevated concentrations of mercury in groundwater are in “sentinel” wells, representing a discharge to the Bay. The recommendations and follow-up actions should include development of a new primary document work plan focused on alternative treatments and treatment methodologies as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness.

11. Figure 3-5, March and September 2022 Exceedances of Remediation Goals in Parcels B-1 and B-2 and IR-07/18 and Figures 4-4 through 4-7 - The figures show exceedances of remediation goals in groundwater.

Specific Comment 11: The figures showing exceedances of remediation goals in groundwater do not include groundwater flow direction. General groundwater flow direction arrows should be presented on figures that show exceedances of remediation goals for COCs in groundwater.

12. Section 4.2.1.1 Geology and Hydrogeology, Section 5.2.1.2 Geology and Hydrogeology, and Section 6.2.1.1 Geology and Hydrogeology - sections describe hydrogeologic characteristics including B-Aquifer.

Specific Comment 12: B-Aquifer groundwater elevations are not provided in these sections. B-Aquifer groundwater elevation ranges should be provided in Section 4.2.1.1, Section 5.2.1.2, and Section 6.2.1.1.

13. Section 4.4.1.1 Remedy implementation, Soil Excavation and Removal - The text discusses changes to the Remedial Action Work Plan (RAWP) based on the findings of Pre-RA investigation. For RUC1 on page 4-6 the text states “[T]he Navy is evaluating options to treat the DNAPL source area and, subsequently, the associated groundwater plume.” And for RU-C2 the text states “The Navy is evaluating a revised approach to achieve soil RAOs and address a potential ongoing source to A-aquifer groundwater (ECC-Insight, 2019).” On page 4-8 for the Soil Vapor Extraction Monitoring the text states “[T]he Navy is in the process of reviewing the strategy for addressing soil gas at all Parcel C areas in conjunction with additional in situ groundwater remediation activities that are ongoing (ECCInsight and CDM Smith, 2019).”

Specific Comment 13: The text discusses changes to the RAWP based on the findings of Pre-RA investigation but does not provide specificity regarding a timeline for how and when alternatives will be evaluated or provided for review. For clarity, Section 4.4.1.1 should be revised to indicate which documents these evaluations will be presented in and when they will be provided to the Regulatory Agencies for review.

14. Section 4.4.1.2 Remedy Operations and Maintenance - as stated on page 4-14, “[A] 7-foot-deep void observed along the pier edge that allowed water to wash in and

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

out with the tide may have contributed to the sinkholes;" a number of "sinkholes" were observed and for some their presence was attributed to tidal action.

Additionally, the text states that, "Subsidence was noted near Buildings 205, 207, and 208 between Dry Dock 2 and Dry Dock 3 that required extensive repairs outside of routine O&M, and 100 feet of permanent chain-link fence was installed across Building 208 to secure the end of the pier."

Specific Comment 14: It does not appear that existing Operations and Maintenance (O&M) methodologies are adequate to address these concerns. The Navy should provide the long-term strategies to address "sinkholes" and subsidence for Parcel C.

15. Section 4.5.2 Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid? - with respect to Parcel C, the Navy responded "yes" to Question B.

Specific Comment 15: The response to Question B should be "uncertain" at this time because the connection and communication between hydrogeologic units within Parcel C is not fully understood. See Protectiveness Determination Comment 2 above for additional details.

16. Section 4.6 Issues, Recommendations, and Follow-up Actions, and Table 4-8 Parcel C and UC-2 Issues, Recommendations, and Follow-up Actions - provides a summary of the issues, recommendations, and follow-up actions for Parcel C.

Specific Comment 16: Radiological retesting should not be the only issue presented in Section 4.6 and on Table 4-8. There are outstanding issues related to the characterization of hydrogeologic units within Parcel C.

Further characterization to demonstrate that 1) remedies within the A-aquifer will be remediated by the selected remedy and not recontaminated by COCs within the B-aquifer and/or F-WBZ and 2) unacceptable discharges to the Bay are not and will not occur should be added to the "Issues" for Parcel C. Additionally, successful implementation of the Deep F-WBZ Investigation for Remedial Unit-C4 (RU-C4) and the planned B-Aquifer investigation should be included in the "Follow-up Actions" for Parcel C.

17. Section 5.4.1.1 Remedy Implementation - page 5-7 text states that, "[T]he Parcel D-1 RAMP (ChaduxTt, 2011a) states that groundwater samples will be collected semiannually until at least two years after property redevelopment to ensure redevelopment activities do not mobilize metals that could migrate into the [B]ay."

Specific Comment 17: Mobilization of metals should be considered due to potential groundwater rise, and monitoring should be reevaluated in this context for

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Parcel D-1. Groundwater monitoring for metals at Parcel D-1 should be continued beyond pending redevelopment and evaluated for continued monitoring due to groundwater rise.

18. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris

Excavation, Consolidation, and/or Removal - page 6-13 text states, “[A]s part of the Phase 2 RA, the tidal and freshwater wetland areas were excavated and graded to the subgrade design as specified in the DBR [Design Basis Report] (ERRG, 2014).”

Specific Comment 18: The full magnitude and extent of crystalline lead oxide and soil contaminated with lead above the hot spot cleanup goal must be addressed with further soil and groundwater sampling. The “white crystalline lead oxide particles” were neither delineated nor removed during construction of the freshwater wetland where it may intersect the Experimental Ship Shielding Range. The description of “crystalline lead oxide particles” encountered during freshwater wetland excavation was removed from the Final Phase II Remedial Action Construction Summary Report; however, that information remains relevant because the vertical extent of lead has not been characterized. The left-in-place lead contamination above the hot spot cleanup goal poses risks to wildlife and may cause lead discharges to the freshwater wetland or the Bay.

19. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris

Excavation, Consolidation, and/or Removal, Table 6-5. Parcel E-2 Remedial Action Summary and Expected Outcomes, and Appendix C Site Inspection and Photograph Logs - summarizes the remedy implementation, expected outcomes, and provides the site inspection details and photos for Parcel E-2.

Specific Comment 19: Failure to implement portions of the remedy demonstrates that RAOs for ecological receptors have not been met in the short-term and deferred protectiveness is appropriate for Parcel E-2.

In accordance with the 2018 RAWP, the Navy committed to installing a turbidity curtain to prevent potential discharges of sediment into the Bay for activities conducted within 250 feet of the shoreline as detailed in Section 11.3, Erosion and Sediment Control Measures, and Appendix E, CERCLA Stormwater Plan (SWP) Section 3.3.1, Non-Stormwater Controls. RAWP construction activities within the tidal influence zone included 1) placement, grading, and compaction of final soil cover and 2) installation of drainage piping features at the freshwater wetlands and near the shoreline retaining wall.

A turbidity curtain was not deployed and evidence shows heavily disturbed soils throughout the shoreline area during the rainy season (see Appendix C, Site Inspection and Photograph Logs, Pages C-119 to C-126 – Site inspection photographs). Visibly turbid standing water along the shoreline revetment indicates a discharge of sediments to the Bay.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

20. Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris Excavation, Consolidation, and/or Removal; and Below Ground Barrier (Slurry Walls) and Table 6-5. Parcel E-2 Remedial Action Summary and Expected Outcomes - The text and table provide details regarding the Upland Slurry Wall including RAOs and performance metrics.

Specific Comment 20: Per Regulatory Agencies' comments, water level and analytical data to demonstrate the Upland Slurry Wall is functioning as designed, as well as engineer certified as-built designs for the Upland Slurry Wall, as modified, need to be provided.

The Upland Slurry Wall was not constructed in accordance with the final design and specifications. The unplanned 220-feet long by 10-feet deep gap in the Upland Slurry Wall may result in unintended consequences to the groundwater flow system and thus unacceptable discharges to the freshwater wetlands and the Bay. The Navy has allowed several years of time lapse without adequately showing that unacceptable discharges of leachate generated from groundwater contact with the landfill waste are being mitigated by collecting and analyzing groundwater data from the existing monitoring wells as requested by the Regulatory Agencies. See Protectiveness Determination Comment 3 for additional details.

21. Section 6.6 Issues, Recommendations, and Follow-up Actions - provides a summary of issues, recommendations, and follow-up actions for Parcel UC-3.

Specific Comment 21: Issues, recommendations, and follow-up actions should not be limited to Parcel UC-3 as there are outstanding issues for Parcel E-2 as documented in Regulatory Agencies' correspondence. See Protectiveness Determination Comment 3 above for additional details.

The following should be added to "Issues" in Section 6.6: turbidity curtain not deployed during construction, stormwater best management practices/records keeping, Upland Slurry Wall not implemented as designed, as-built designs for changes to the Upland Slurry Wall not provided, methane mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.

The following "Recommendations and Follow-up Actions" should be added to Table 6-11: obtain as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California, monitor water levels and collect analytical data to demonstrate the Upland Slurry Wall is functioning as designed, collect soil samples in the vicinity of RCRA hazardous waste piles, collect soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated, revise compliance monitoring and mitigation plan for methane at the landfill, and provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

22. Appendix A, Section 1.0 Introduction - The Navy used the Department of Defense Regional Sea Level (DRSL, 2015) database to evaluate climate-related hazards, the most important of which is coastal flooding due to the site's proximity to the Bay. The DRSL considers scenarios for the years 2035, 2065, and 2100 and accounts for site specific adjustments, including vertical land movement.

Specific Comment 22a: Of the two timeframes evaluated (2035 and 2065), vertical land movement was only considered for the 2065 scenario. Explain why the Navy doesn't evaluate vertical land movement in the 2035 scenario.

Specific Comment 22b: Why isn't the 2100 scenario considered in this CRA?

Specific Comment 22c: Justify the use of guidance dated 2015 when more current and site-specific guidance and sea level rise projections are available, such as the Ocean Protection Council (OPC) State of California Sea Level Rise Guidance (2018) and OPC Sea-Level Rise Action Plan (2022).

23. Appendix A, Section 2.1, Sea Level Rise Projections - This section references a 30-year timeframe for a phased approach to plan for sea level rise, per the DTSC Draft Sea Level Rise Guidance (2023). Sea level rise projections of 1 foot for the year 2035, and 3.2 feet for 2065 were selected as the most conservative levels based on the DRSL report and are generally consistent with projections made in the OPC State of California Sea Level Rise Guidance which DTSC's Draft Guidance relies upon.

Specific Comment 23a: While 30 years is referenced as a minimum planning timeframe for a phased approach, this document fails to mention that applies to a remedy that provides a minimum of 30 years of protection against sea level rise and that DTSC "prefers full action taken now to address future impacts, but will consider a phased adaptation approach on a case-by-case basis."

Specific Comment 23b: The DTSC Draft Guidance states that "to ensure remedy resilience...evaluate projects based on sea level rise of 3.5 feet by 2050, and 6 feet by 2100," which are the recommended targets for minimum sea level rise planning and preparation, as presented in the OPC Sea-Level Rise Action Plan (2022).

24. Appendix A, Section 2.2 Seawater Inundation Impacts, Section 2.3 Storm Surges, Section 3.1 Groundwater Emergence, Figures 2-2, 2-3, 2-4, 2-5, 3-1, and 3-2 - the text states that "[F]igures 2-2 and 2-3 show the potential for permanent seawater inundation in 2035 and 2065, for the highest SLR scenarios in DRSL. Except for some marginal seawater encroachment at the edges of some parcels, no permanent seawater inundation is projected in any of the parcels during 2035 and 2065, under the highest SLR scenario."

Specific Comment 24: No details are provided regarding which specific remedies, remedy components, or COCs may be impacted by this inundation. These concerns apply to storm surges, transient inundation, and groundwater emergence. The text

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

should be revised to include which specific remedies, remedy components, and/or COCs will be impacted by permanent inundation, storm surges, or groundwater emergence. Additionally, figures should be revised to depict the locations of remedy and COC boundaries in relation to permanent inundation, storm surges, or groundwater emergence.

25. Section 2.3 Storm Surges, Figure 2-4 and Figure 2-5 - The transient inundation is shown to be extensive by 2035 as stated in the text, “[P]ortions of IR 7/18, and Parcels B-1, B-2, C, D-1, E, and the low-lying areas of E-2 are projected to be impacted.”

Specific Comment 25: Parcel specific evaluations should be initiated immediately due to concerns regarding transient inundation. Parcel D-1, Parcel E, and Parcel E-2 should be prioritized.

Eleven years is a short time to assess existing remedies for resilience and implement changes if needed to prevent exposures. Additionally, this prediction may not be appropriately conservative, as similar inundation to that depicted in Figure 2-4 for Parcel E in 2035 was observed on January 23, 2024, as documented in the Regional Water Board’s [email](#) to the Navy sent on January 30, 2024.

26. Appendix A, Section 3.1 Groundwater Emergence - The mean sea level (MSL) is used as the datum to determine permanent sea level rise induced groundwater table rise, as used by the City of Alameda (2022). A 1:1 ratio of groundwater table rise to MSL rise was considered, and the projected groundwater rise was added to the baseline.

Specific Comment 26a: In the Seawater Inundation Impacts section, mean high higher water (MHHW) is the standard elevation used as a baseline, and is the standard used in SLR mapping tools. SLR is added to the MHHW for evaluation for potential upland inundation. The MHHW should be applied instead of MSL for SLR calculations.

Specific Comment 26b: The reference to the City of Alameda report from 2022 uses data from a 2020 report on “The Response of the Shallow Groundwater and Contaminants to Sea Level Rise” for the City of Alameda. The authors of this report have published more recent, and more applicable data that should be applied to this CRA - “Shallow Groundwater Response to Sea-Level Rise (Alameda, Marin, San Francisco, and San Mateo Counties).” The more recent report with county-specific data should be used.

Specific Comment 26c: The above report does reference the MSL datum; however, this assessment fails to mention “the Bay water level elevation approximately one foot above the mean tide line was selected because fresh groundwater is usually found just above the mean tide line inland of coastal embayments.” The additional foot above MSL should be accounted for in these projections of groundwater emergence.

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

Specific Comment 26d: The CRA should explain how tidal fluctuations were accounted for in evaluating groundwater emergence, when “tidal fluctuations were observed from 150 to 500 feet inland from the [B]ay” within the A-Aquifer in both Parcels C and D, as stated in sections 4.2.1.2 and 5.2.1.2.

27. Appendix A, Section 5.1 Assessment Methodology - The vulnerability assessment evaluates whether impacts identified in the CRA indicate a new exposure, and whether site COCs (chlorinated volatile organic compounds [CVOCs], heavy metals, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) are identified as most likely to persist through 2035 and 2065. Potential vulnerabilities to both human and ecological receptors to heavy metals were identified due to groundwater emergence.

Specific Comment 27: Explain why the other COCs, i.e., CVOCs, PCBs, and PAHs, do not present a threat to human health and the environment as groundwater emerges.

28. Appendix A, Section 5.3.1 Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs, Page A-20 - Where previous treatment of a CVOC source left behind residual mass, additional treatment is planned. By 2035 any residual CVOCs in groundwater are projected to attenuate below remedial goals.

Specific Comment 28: This assumption should be reevaluated after additional treatment is performed, and well ahead of any projected groundwater emergence.

29. Appendix A, Section 5.3.4 Potential New Exposure to Subsurface Remedy Infrastructure to Saltwater Intrusion, Page A-21 - The groundwater at many locations is high in “saltwater components, such as chloride” indicating that saltwater intrusion is an ongoing phenomenon.

Specific Comment 29: A geochemical evaluation should be performed to evaluate how the site COCs detected in soil and groundwater will be affected by increasing salinity.

30. Appendix A, Section 5.3.6 Parcel E-2 Remedy Resiliency - The Parcel E-2 landfill has design elements which will make the remedy resilient to sea level rise through 2065, including the addition of a 9-foot shoreline revetment and 3-foot sea wall. The planned construction of fresh and tidal wetlands is designed to store and transmit seawater, rain, and groundwater to mitigate sea level rise effects.

Specific Comment 30: Consider the following in the remedy design and future monitoring and maintenance of the landfill: as groundwater becomes emergent, as it is projected in the CRA to do by 2035 with 1 foot of sea level rise, contaminated groundwater may enter the freshwater wetland impacting ecological receptors; the wetland may overflow its design footprint which can impact the nearby or surrounding protective landfill cap; and contaminated groundwater may overtop the

U.S. Department of the Navy
Draft Fifth Five-Year Review Comments

April 30, 2024

downgradient slurry wall. Additionally, it is unclear how/why passive design elements alone are considered enough for resilience when active solutions such as hydraulic control may be needed to prevent migration of contaminants.

Attachment 2



San Francisco Bay Regional Water Quality Control Board

June 4, 2024

U.S. Department of the Navy
Attn: Michael Pound, BRAC Environmental Coordinator
NAVFAC BRAC PMO West
33000 Nixie Way, Bldg. 50, 2nd Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Subject: Regional Water Board Evaluation of May 2024 Navy Responses to Consolidated Agency Comments (Redline version dated May 27, 2024) for the November 2023 Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, San Francisco County

Dear Mr. Pound:

The San Francisco Bay Regional Water Quality Control Board (Regional Water Board) has reviewed the subject responses to comments (RTCs) on the Draft Fifth Five-Year Review Report (Draft Five-Year Review) for the Former Hunters Point Naval Shipyard (HPNS).

After reviewing the RTCs, including the Navy's proposed changes for its protectiveness determination for Parcel B-2 for Installation Restoration (IR) Site 26 and Parcel C, our protectiveness determinations remain different from the Navy's for Parcel B-2 and Parcel E-2.

A summary of the Navy's protectiveness determination, including changes proposed since the November 2023 submittal of the Draft Five-Year Review, and the Regional Water Board's protectiveness determinations for Parcel B-2, Parcel C, and Parcel E-2 is provided below:

Parcel	Navy's Protectiveness Determination	Regional Water Board's Preliminary Protectiveness Determination
Parcel B-2	Protectiveness Deferred revised from Short-Term Protective	Not Protective
Parcel C	Protectiveness Deferred revised from Will Be Protective	Protectiveness Deferred
Parcel E-2	Will Be Protective	Protectiveness Deferred

ALEXIS STRAUSS HACKER, CHAIR | EILEEN M. WHITE, EXECUTIVE OFFICER

1515 Clay St., Suite 1400, Oakland, CA 94612 | www.waterboards.ca.gov/sanfranciscobay

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

In addition to the changes to protectiveness determination there are several revisions that the Navy verbally committed to during April and May 2024 in person meetings with the Regulatory Agencies (Regional Water Board, Department of Toxic Substances Control (DTSC), and United States Environmental Protection Agency (USEPA)) that are not reflected in the Navy's RTCs. For example, it is important to revise the "Issues, Recommendations, and Follow-up Actions" sections and tables that reflect key milestones (i.e., primary documents) with timeframes and schedules in order to address Regulatory Agencies concerns related to protectiveness and/or remedy effectiveness and demonstrate that the Navy and Regulatory Agencies have a shared understanding of the path forward for the individual parcels. These timeframes and schedules can/will be used as a tracking tool until the next Five-Year Review.

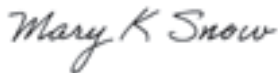
For transparency and as a matter of public record, we request that Regulatory Agencies evaluations of the Navy response to comments be included in the responsiveness summary of the Draft-Final Five-Year Review.

Due to the Navy's request for an expedited review of the RTCs, our attached comments focus on overarching concerns and are not exhaustive. We will continue to meet and work collaboratively with the Navy and our regulatory counterparts on the Five-Year Review and look forward to satisfactory resolution to our comments, so that we will be able to provide our concurrence on the Final Five-Year Review.

We defer to DTSC and USEPA regarding the radiological findings presented in the Draft Five-Year Review.

If you have any questions, please contact me at Mary.Snow@waterboards.ca.gov or (510) 622-2338.

Sincerely,



Mary Snow, P.G.
Engineering Geologist
Groundwater Protection Division

Attachment: Regional Water Board Comments

cc via email:

Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Michael Howley, DTSC, Michael.Howley@dtsc.ca.gov
Marienel Basiga, DTSC, Marienel.Basiga@dtsc.ca.gov
Ryan Casey, SFDPH, Ryan.Casey@sfdph.org
Andy Bain, USEPA, Bain.Andrew@epa.gov
Karen Ueno, USEPA, Ueno.Karen@epa.gov
Daniel Haskell, USEPA, Haskell.Daniel@epa.gov
Alex Valentine, Regional Water Board, Alexander.Valentine@Waterboards.ca.gov

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Attachment**Regional Water Board New Comment**

- 1. New Comment 1:** There was an expectation that the redline RTC revisions would include all relevant revisions for the purpose of evaluating the Navy response to Regulatory Agencies' comments, e.g., revised text, tables, and figures; however, these details have been inconsistently provided or not included in the RTCs. The Regulatory Agencies have identified several issues, recommendations, and follow-up actions that are necessary to inform and/or demonstrate effectiveness of existing remedies or for remedies in the implementation phase. Specific milestones (i.e., primary documents), schedules, and timeframes should be specified and included in the Draft-Final Five-Year Review. Sections 3.6 (Parcel B-2), 4.6 (Parcel C), 5.6 (Parcel D), and 6.6 (Parcel E-2), as well as Tables 3-4, 4-8, 5-8, and 6-11 need to be updated to provide the specific details requested by the Regulatory Agencies.

Regional Water Board Evaluation of Navy Response to Comments**1. Navy Response to Regional Water Board Protectiveness Determination**

Comment 1 (General): On page 1 of 71 the response states that "[T]he multiple lines of evidence presented in the Five-Year Review suggest the [mercury] concentrations observed in groundwater are unlikely to exceed [the Remedial Design Trigger Level (TL) of] 0.6 micrograms per liter ($\mu\text{g/L}$) in Bay (San Francisco Bay) surface water."

Page 2 of 71 the response goes on to state:

- a) Completion of source removal in 2008 via a time-critical removal action (TCRA; Insight, 2009)
- b) Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the [RAO] from 3 locations to 2 and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-6. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL [Hunters Point Groundwater Ambient Level].
- c) The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.
- d) Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.

Regional Water Board Response 1a: We do not agree that the 2008 TCRA is a line of evidence supporting Navy's conclusion that mercury concentrations in groundwater are unlikely to exceed 0.6 µg/L in Bay water. The TCRA did not remove mercury contamination within bedrock. Five samples collected from the top of the underlying bedrock contained mercury concentrations that exceeded the soil remediation goal (RG) of 2.3 mg/kg, ranging from 5.9 to 15 mg/kg (Figure 4). All five samples with elevated mercury were located immediately adjacent to the Bay and up-gradient "sentinel" wells IR26MW49A and IR26MW71A. Incomplete removal of mercury from bedrock sustains the unacceptable mercury discharges to the Bay.

Regional Water Board Response 1b: Given that groundwater treatment was implemented 7.5 years ago and has failed to achieve the TL of 0.6 µg/L mercury in sentinel wells IR26MW49A and IR26MW71A, the only wells down-gradient of the source area, we do not agree that the remedy has been partially successful. Rather, it has failed.

Whereas our trend analysis indicates that mercury concentrations are likely decreasing in well IR26MW49A, it is nonetheless an order of magnitude greater than the TL; consequently, the cleanup timeframe at best will be many decades unless alternative remedial actions are completed. Mercury concentrations in well IR26MW71A are consistently greater than the RAO and stable, meaning that the cleanup timeframe for that plume area is unknown, and requires further evaluation.

Regional Water Board Response 1c: We do not agree that the Navy's assessment that the extent of mercury-contaminated groundwater is limited (and shrinking), because the extent of mercury contamination has not been characterized in the following directions:

- vertically in bedrock;
- east and south of Source Area 2 where five confirmation samples contained mercury concentrations above the soil RG; and
- in the San Francisco Bay.

Until the data gaps are addressed with additional investigation, the conclusions presented in the Five-Year review are not supported regarding the extent of the mercury plume.

Regional Water Board Response 1d: We disagree with the Navy's statement that "the groundwater is not representative of Bay water." The industry standard to evaluate freshwater-seawater mixing uses conductivity measurements. Based on our review of the 2022 conductivity measurements for nearshore wells IR26MW49A, IR26MW70A, and IR26MW71A, samples collected from these wells were

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

100 percent mixed (i.e., the water samples were essentially Bay water). Therefore, sample laboratory analytical data for these wells are more representative of ambient mercury concentrations in Bay surface water. Additionally, based on our comparison of the 2022 sampling times to the National Oceanic and Atmospheric Administration's tide predictions, sampling of the nearshore monitoring wells was not conducted with consideration of predicted tide levels and, consequently, samples were not collected at low tides when groundwater discharges to the Bay. Because samples collected from nearshore wells were likely mixed/diluted, no dilution factor should be applied to nearshore groundwater data.

Applying a standard Site Conceptual Model for groundwater discharge to surface water, mercury-contaminated groundwater migrates through and beneath the shoreline revetment during low tides and upwells into the Bay's transition zone¹. We are concerned that benthic organisms are exposed to harmful mercury concentrations.

Further, we are concerned that sample analytical results do not represent the mercury concentrations that the Bay's aquatic life is exposed to because samples are filtered in the field, removing mercury adsorbed on colloids in groundwater. When/where mercury discharges to the Bay with minimal dilution, including mercury in adsorbed phases, mercury concentrations may be greater than the reported concentrations in sentinel wells IR26MW49A and IR26MW71A. Consequently, we recommend that future water samples collected from all nearshore wells be analyzed for both dissolved and total mercury (no field filtration prior to analysis).

The Navy concluded that a "protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater." We disagree and as stated in our original comment, our protectiveness determination for Parcel B-2, IR Site 26 is "Not Protective."

Regional Water Board Response 1e: We disagree that a protectiveness determination cannot be made at this time. Elevated concentrations of mercury in groundwater exist in the sentinel wells, i.e., the points of compliance, representing unacceptable discharges to the Bay and evidence of exposure to the Bay's aquatic life. Consistent with USEPA guidance (2012), "Not Protective" is the appropriate protectiveness determination.

TL for Mercury in Groundwater. In response to the Regional Water Board's concerns regarding the validity of the mercury TL in groundwater, a link to the source document was provided. However, the link was not accessible and could not

¹ U.S. EPA, 2008. ECO Update/Ground Water Forum Issue Paper: Evaluating Ground-Water/Surface-Water Transition Zones in Ecological Risk Assessments. July. A transition zone is a region beneath the bottom of a surface-water body where conditions change from a groundwater dominated to surface-water dominated system within the substrate. The transition zone is an ecologically active area beneath the sediment/water interface where a variety of important ecological and physiochemical conditions and processes may occur.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

be evaluated. Therefore, we continue to maintain that the HGAL for mercury of 0.6 µg/L, which is the basis of the mercury TL and Remedial Action Objective, is not appropriately representative because:

- a. Influences from HPNS industrial activities are reflected in the data used.
- b. The HGAL is not specific to IR Site 26. Only 8 of 162 samples were collected from Parcel B-2, and it is likely that no sample was collected from IR Site 26.
- c. Mercury analytical results used to estimate the mercury HGAL were obtained over a period of about one year, which could not reflect the seasonal and medium- to long-term variability of mercury in groundwater.
- d. The data used to calculate the mercury HGAL were entirely comprised of non-detect concentrations or their derivatives.

2. Navy Response to Regional Water Board Protectiveness Determination

Comment 2 (General): Page 5 of 71 response states, “[N]avy acknowledges that while the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to “Protectiveness Deferred” until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ (fractured water-bearing zone) investigation for RU-C4 (Remedial Unit) and the B-Aquifer investigation.”

Page 7 of 71 revised text states, “[I]t is expected that these actions will take approximately 5 years to complete, at which time a protectiveness determination will be made.”

Regional Water Board Response 2: Although the response discusses the two documents that will fill the data gaps, i.e., Deep F-WBZ investigation for RU-C4 and the B-Aquifer investigation, the response lacks specificity regarding detailed timeframes and schedules for completion. The text should be revised to include timeframe/schedule details.

3. Navy Response to Regional Water Board Protectiveness Determination

Comment 3 (General): The RTC identifies concerns from Water Board Specific Comments 18, 19, 20 and 21 on Parcel E-2 and explains the protectiveness determination of “Will be Protective” is due to the remedy being currently under construction. The following summarizes Navy responses that do not adequately address Water Board concerns:

- **Upland Slurry Wall (USW) was not installed as designed.** The Navy states a work plan is under Agency review to evaluate USW performance and work is anticipated to begin in 2025.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

- **Turbidity curtain was not used during remedy construction.** The Navy indicates a turbidity curtain was used during Phase II remedial action construction work.
- **The Navy has not provided all stormwater best practices documentation.** The Navy states they have responded to the requests for stormwater records, specifically related to December 3, 2022, and January 11, 2023, Water Board correspondences.
- **There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future.** The Navy references post-over-excavation samples that were below the RG for lead-impacted soils.

Regional Water Board Response 3a: We disagree with the rationale for the Navy's protectiveness determination based on the completion of several remedy components that can be monitored for effectiveness/protectiveness. As described in the original Comment 3a, we have outlined the necessary data and information that can be collected to address longstanding agency concerns about the completed remedies.

We acknowledge that the Navy has agreed to address the following issues: collection of soil samples near Resource Conservation and Recovery Act (RCRA) hazardous waste piles and provide an addendum to the compliance monitoring and mitigation plan for methane at the landfill. However, several outstanding concerns have not been addressed by the RTCs as described in our Responses 3b to 3e below.

Regional Water Board Response 3b: Based on our understanding of the scope of work for the work plan to evaluate USW performance, the water level and analytical data to demonstrate USW is functioning as designed have not been included as requested by regulatory agencies. We have reiterated the importance of the data for evaluation of potential discharges using existing monitoring wells and have not received an adequate rationale for omitting this from forthcoming field investigations. Therefore, we cannot concur that the remedy "Will be Protective" because the necessary data to show remedy effectiveness/protectiveness is not being collected.

Regional Water Board Response 3c: The Navy references the turbidity curtain installed as part of the Phase II remedial action. However, as described in Specific Comment 19, our concerns are related to the 2018 Remedial Action Work Plan (RAWP), which covers activities of the Phase III remedial action and also required installation of a turbidity curtain. The RTC does not adequately address our comment and we find that a "Protectiveness Deferred" designation is more appropriate until the Navy can assure regulatory agencies that future work will comply with the site-specific Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Stormwater Plans.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Regional Water Board Response 3d: The RTC references Water Board correspondences from December 2022 and January 2023. As discussed in the May 2025 meetings, this does not represent the most recent correspondence and discussions regarding these concerns. On May 11, 2023, the Navy and regulatory agencies met to discuss unresolved issues with the records provided. Our concerns about significant lapses in the submitted best management practices (BMP) Inspection Reports were not addressed and the Navy contractor indicated they would submit additional documentation. We followed up with a May 23, 2023, email requesting the additional records and received no acknowledgement or response from the Navy nor its contractors. "Protectiveness Deferred" is consistent with our assessment that the previous five-year period showed inadequate documentation of stormwater BMPs and the CERCLA Stormwater Plans compliance.

Regional Water Board Response 3e: We maintain that lead-contaminated soil was not adequately characterized or removed during the over-excavations documented in Fieldwork Variance #5 (Appendix G of Phase 2 Remedial Action Construction Summary Report, RACSR). See Attachment 2 from the August 7, 2020, [Water Board letter](#) for unresolved concerns about the lead RG exceedances that appear to have been left-in-place. As described in follow on correspondences listed in General Comment 3, the collection of soil/groundwater samples is needed to evaluate whether remediation was adequately completed, and we cannot concur with the "Will be Protective" determination until there is commitment from the Navy to provide this data.

4. Navy Response to Regional Water Board Protectiveness Determination

Comment 4 (General): The Water Board stated that there is insufficient data from each parcel to demonstrate that existing remedies account for per- and polyfluoroalkyl substances (PFAS) transport and containment.

The Navy response states that site remedies should only be evaluated for protectiveness if it is confirmed that they do not address current or future exposure to PFAS. In addition, the response states that it is not appropriate to evaluate existing site remedies prior to initiation of the PFAS remedial investigation.

The response identifies concerns from Water Board Specific Comment 4 on PFAS and explains that protectiveness determinations for existing remedies are not affected because existing remedies already account for PFAS in their design and implementation. According to the Navy, these existing protections are accounted for because:

- Groundwater is not suitable for use as drinking water within the A-aquifer.
- Current durable covers and institutional controls restrict human and terrestrial ecological receptor exposure to all site soils.

Only one site-specific remedy was evaluated in the RTC and provided in the text revision, the near-shore slurry wall located at Parcel E-2. The Navy described that

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

the cement-bentonite mixture of the wall is expected to inhibit PFAS based on how it inhibits volatile organic compounds (VOCs).

Published ecological screening values from Argonne (2021) were also provided in the text as a line of evidence supporting no imminent CERCLA-related risk at HPNS.

Regional Water Board Response 4a: The lines of evidence provided supporting no imminent CERCLA-related risk are insufficient. Therefore, our protectiveness determination with respect to PFAS is “Protectiveness Deferred” Basewide.

The Regional Water Board has not provided a Basewide exemption for groundwater as a drinking water source, while groundwater at or near the site is not currently used as a drinking water source (i.e., for comparison to the USEPA National Drinking Water Regulations (NDWR) for six primary PFAS compounds), risk for ecological receptors and therefore, recreational users, to PFAS in contaminated surface water and groundwater is not accounted for or established in this response. The Argonne ecological screening values provided are on the order of a wide range, up to over three orders of magnitude for perfluorooctanoic acid (PFOA). These values also do not represent established site-specific risk criteria as agreed to by the Federal Facility Agreement parties.

Further, there is no evidence that the durable covers currently in-place can prevent PFAS from leaching from soil to groundwater or surface water at the site, which is a potential migration pathway. Considering the highly mobile nature of PFAS compounds, these pathways likely result in PFAS discharge to Bay waters and exposure to offshore receptors. The risk for exposure to these receptors has yet to be addressed by site remedies and demonstrate that protectiveness with regard to site PFAS has not been established.

Regional Water Board Response 4b: The response that the properties of the near-shore slurry wall at Parcel E-2 (i.e. a cement-bentonite mixture) are capable of inhibiting PFAS transport in groundwater, and groundwater to surface water, is not informed nor substantiated.

PFOA detected in groundwater upgradient of this location (i.e. 18 micrograms per liter at IR01MW60A) is multiple orders of magnitude more than its NDWR of 4 nanograms per liter. This indicates that there is a significant PFAS plume present within groundwater at Parcel E-2. No data was provided to support that this site remedy, which was not designed to mitigate PFAS releases in groundwater, is able to prevent a PFAS plume of this magnitude from migrating in groundwater.

PFAS compounds are known to be considerably more mobile and pervasive compared to VOCs, so it is unclear how this remedy can inhibit this contamination. PFAS compounds are also considerably more toxic at minor concentrations compared to VOCs (e.g. compared to tetrachloroethene federal maximum contaminant level of 5 *micrograms* per liter), so it should be expected that PFAS are more difficult to contain with the same remedy. In addition, it is also unclear how the

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

physical extent of the remedy (i.e. depth and lateral extent) was designed to mitigate this high concentration PFAS plume.

Further, no downgradient data, either in surface water or groundwater, exist to support that this remedy is currently functioning to inhibit PFAS migration.

Regional Water Board Response 4c: Based on the information provided above, we disagree with the rationale for the Navy's protectiveness determination with respect to PFAS. As stated in USEPA's April 3, 2024, RPM Bulletin 2024-01 (*Considerations When Reviewing PFAS in Five-Year Reviews*):

To build a case to support the analysis of whether the newly identified contaminants could impact the protectiveness of the existing remedy, the FYR should incorporate what is known and not known about the contamination, and whether existing remedies may fully or partially mitigate risks.

Because there is insufficient data available at this time, prior to the initiation of the remedial investigation, a Protectiveness Deferred determination should be assigned with respect to site PFAS.

Further, the June 2011 Navy policy which was provided does not substantiate the statement in the response that "an emerging contaminant should only affect a protectiveness determination if the emerging contaminant is present at a concentration posing a potential unacceptable risk at the site and the existing remedy does not address the current or future exposure to the emerging contaminant." The June 2011 policy only refers to investigation of the emerging contaminant itself and does not reference initiation of remedial investigations precluding assignment of protectiveness determinations. Rather, this policy states the investigation of an emerging contaminant should proceed based on whether "the contaminant may call into question the protectiveness of either the remedy or the RAOs."

Therefore, our protectiveness determination with respect to PFAS is "Protectiveness Deferred" Basewide

5. Navy Response to Regional Water Board Protectiveness Determination

Comment 5 (General): The RTC identifies concerns from Water Board Specific Comments 17, 24, 25, 28, and 29 on climate vulnerability and explains that protectiveness determinations can be better evaluated with site-specific studies. The following parcels were identified for site-specific studies based on threat from sea level rise: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel D-1, Parcel G, Parcel E, and Parcel E-2. Further, the RTC indicates that the Navy will commit to holding a prioritization meeting with the members of the Federal Facility Agreement in November 2024.

Regional Water Board Response 5: The Water Board generally concurs with these recommendations; however, we request the following response be addressed.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Describe why Parcel UC-1, Parcel UC-2, Parcel UC-3, and Parcel D-2 were not included in the list of site-specific studies to address climate vulnerability. It is our understanding that while these parcels have less prioritization compared to other, more vulnerable site locations, they are still susceptible to climate vulnerability (e.g. transient inundation, groundwater rise, etc.) and should also be included for site-specific evaluations.

Additionally, Site-specific climate vulnerability studies should be discussed in and presented on in parcel specific sections and tables for “Issues, Recommendations, and Follow-up Actions.”

Regional Water Board Evaluation of Navy Response to Specific Comments

1. **Navy Response to Specific Comment 3:** The Navy provides an affirmative response to the Regional Water Boards request for consistent nomenclature for Installation Restoration (IR) Site numbering.

Regional Water Board Response Specific Comment 3: could not be evaluated without the revisited document.

2. **Navy Response to Specific Comment 6a:** Proposed text revision “Based on the negligible change in historical survey monument elevations, the next round of settlement monument surveys will be in 2024.”

Regional Water Board Response Specific Comment 6a: Consider the defining “negligible change” in the text e.g., “negligible change (i.e., less than 0.1 foot).”

3. **Navy Response to Specific Comments 7 and 11:** The Navy disagrees with the Regional Water Boards request for discussion and depiction of flow directions and flow lines.

Regional Water Board Response Specific Comments 7 and 11: Response does not address the request with respect to the addition of a discussion of groundwater flow or request for depiction for groundwater flow paths on a figure. These requests will assist the public in understanding the relationship between groundwater, surface water, and contamination at the Parcels.

4. **Navy Response to Specific Comment 8, 9 and 10:** The Navy provided responses to Regional Water Board comments regarding Parcel B-2, IR Site-26.

Regional Water Board Response Specific Comment 8, 9, and 10: The responses do not adequately address Regional Water Board’s concerns, refer to our evaluation of Response to Protectiveness Determination Comment 1 (General) above.

5. **Navy Response to Specific Comment 14:** The Navy provided a response to the Regional Water Boards comments regarding Operations and Maintenance (O&M) strategies to address erosional features at Parcel C.

U.S. Department of the Navy
Response to Comments Draft Fifth Five-Year Review

June 4, 2024

Regional Water Board Response Specific Comment 14: The text should be updated to notify the public of the plan and include schedule timeframes for addressing these erosional features.

- 6. Navy Response to Specific Comment 15:** The Navy provided responses to Regional Water Board comments regarding Parcel C.

Regional Water Board Response Specific Comment 15: The response does not address the Regional Water Boards comment; the data gaps will persist until the proposed investigations are complete therefore the response to Question B remains uncertain.

- 7. Navy Response to Specific Comment 18, 19, 20, and 21:** The Navy provided responses to Regional Water Board comments regarding Parcel E-2.

Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.

- 8. Navy Response to Specific Comment 22c (Specific):** The RTC states that the Department of Defense (DoD) plans to update the DoD Regional Sea Level (DRSL) guidance periodically.

Regional Water Board Response Specific Comment 22c: Please clarify whether there is an associated date or timeline for this updated DRSL guidance.

- 9. Navy Response to Specific Comment 23b:** The RTC states that the DRSL projections are now more conservative based on consistency with the upcoming Ocean Protection Council (OPC) State of California Sea Level Rise Guidance (2024).

Regional Water Board Response Specific Comment 23b: Note the OPC State of California Sea-Level Rise Action Plan (2022) lists 3.5 feet (ft) and 6 ft of sea level rise as target planning levels for resiliency by 2050 and 2100, respectively. Therefore, the DRSL projections should be benchmarked, or as close as possible, to the above Sea-Level Rise Action Plan criteria to factor in the need for a 2100 planning scenario, which is consistent with the current DTSC guidance.



Meredith Williams, Ph.D., Director
700 Heinz Avenue
Berkeley, California 94710-2721



April 30, 2024

Michael Pound
NAVFAC BRAC PMO West
33000 Nixie Way
Building 50, Floor 2
San Diego, California 92147
michael.i.pound.civ@us.navy.mil

DRAFT FIFTH FIVE-YEAR REVIEW REPORT FOR THE HUNTERS POINT NAVAL
SHIPYARD IN SAN FRANCISCO, CALIFORNIA (SITE CODE: 200050)

Dear Michael Pound:

The Department of Toxic Substances Control (DTSC) has completed our review of the *Draft Fifth Five-Year Review Report*, dated November 2023 (draft Five-Year Review). The California Department of Public Health (CDPH) has also reviewed the draft Five-Year Review and has no comments. DTSC's comments are presented below.

DTSC Comments:

Michael Pound
April 30, 2024

1. General comment: Throughout the document, references to the Fourth Five-Year Review Issues, Recommendations, and Follow-up Actions (e.g., Table 3-4) note that addenda were prepared to evaluate the Radiological Remediation Goals for soil and buildings. During the Fourth Five-Year Review, DTSC and CDPH deferred to the United States Environmental Protection Agency (USEPA) for resolution of comments on the Radiological Building Addendum. DTSC understands that the addendum may have been overcome by events and is no longer relevant as the Navy intends to demolish and dispose of the buildings in question, and that risk-based remediation goals would be moot. DTSC defers to USEPA for resolution of any outstanding issues related to the Fourth Five-Year Review Radiological Building Addendum.
2. Issues/Recommendations: The Five-Year Review Summary Form and individual parcel recommendations (e.g., Table 4-8 for Parcel C) do not reflect the conclusions and recommendations of the Climate Resiliency Assessment (CRA). The CRA states: “if a vulnerability is projected to result in a potentially new exposure scenario for either human or ecological receptors through 2065, then an IR site-specific study is recommended to evaluate the potential Comprehensive environmental Response, Compensation, and Liability Act (CERCLA) risk to human and ecological receptors to inform the next Five-Year Review.” The CRA then recommends such studies for Parcels IR 7/18, B-1, B-2, C, D-1, and E. Based on the results of the CRA, DTSC also believes this list should include Parcel E-2 (see comment 19 below). Each of these should be reflected in the Issues/Recommendations. The recommendations should include information on what is to be studied (see comments 12 and 13 below), what information or guidance may be relevant (see comment 11 below), and the anticipated completion date.
3. Issues/Recommendations: Parcels B-1, B-2, C, D-1, E, E-2, and G should note in the respective Issues/Recommendations tables that the September 2023 *Final Site Inspection Report for the Basewide Investigation of Per- and Polyfluoroalkyl Substances (PFAS)* recommended further investigation for PFAS in soil and groundwater. The PFAS discussion sections of the Five-Year Review should reference the April 10, 2024, *USEPA Final PFAS National Primary Drinking Water Regulation*, and compare data collected in the Site Inspection Report to the USEPA Regional Screening Levels (RSLs) and Maximum Contaminant Levels (MCLs) as applicable. While institutional controls may render the site short-term protective for human health risk, parcels with identified ecological receptors should be evaluated for deferred protection.

Michael Pound
April 30, 2024

4. Issues/Recommendations, Parcel E-2: Although remedy construction at Parcel E-2 is ongoing, DTSC, the San Francisco Bay Regional Water Quality Control Board (Regional Water Board), and USEPA have raised concerns about multiple aspects of implementation that should be reflected here (see letters dated May 5, 2022, and December 8, 2022). The Five-Year Review should reflect Navy commitments to develop a Remedial Action Study Workplan to evaluate the integrity and performance of the upland slurry wall, as well as a commitment to revise the landfill gas monitoring plan to account for changes in monitoring well locations. In addition, the Navy should develop a work plan (primary document under the Federal Facilities Agreement) to evaluate groundwater and surface water near the freshwater wetlands to demonstrate that lead compounds are not leaching to the San Francisco Bay while the remainder of the remedy is constructed or that new contamination was not introduced from improperly managed stockpiles.
5. Protectiveness Statements, Parcel B-2: As stated in letters from DTSC, the Regional Water Board, and the USEPA dated August 20, 2021, and November 23, 2021, the agencies believe that the *in situ* stabilization remedy at IR-26 has failed to prevent mercury discharge to San Francisco Bay. Based on the information in the record, DTSC believes the remedy for Parcel B-2 should be deemed Not Protective. However, in a meeting with the regulatory agencies on April 25, 2024, the Navy presented evidence that exceedances of mercury thresholds in groundwater wells may not necessarily indicate exceedances at the Bay water point of compliance. The Navy acknowledged that data gaps remain and that protectiveness should be deferred until additional investigation can be conducted. These data presented by the Navy on April 25, 2024, should be included in the assessment of Parcel B-2. This includes a comparison of parametric measurements of groundwater and surface water, an explanation of the data source of the mercury trigger level, and an explanation of any attenuation factor assumptions used in the analysis. The Issues/Recommendations tables should be updated to document the exceedances and data gaps, describe how the Navy intends to address them, and set an expected timeline for resolution of the data gaps and additional remedy implementation. If these revisions are made as described, DTSC would concur with a designation of Protectiveness Deferred.

Michael Pound
April 30, 2024

6. Protectiveness Statements, Parcel C: DTSC believes Parcel C should be deemed Protectiveness Deferred until certain planned investigations can be completed. While remedy implementation is ongoing to address contamination in the A-Aquifer, the Navy has planned investigations of the B-Aquifer and Fractured Water-Bearing Zone and their potential communication with the A-Aquifer and the San Francisco Bay. The need for these investigations, along with vulnerabilities identified in the CRA, represent data gaps that must be addressed before the remedy can be deemed protective. In a meeting with regulatory agencies on April 25, 2024, the Navy agreed to a statement of Protectiveness Deferred for Parcel C and agreed to include these investigations in the Issues/Recommendations.
7. General comment: The history of some Installation Restoration (IR) sites are not mentioned. For example, IR-A in Parcel B-1 was listed in Section 3.1 as an IR located in Former Parcel B but was no longer mentioned in the following description of the site in Section 3.1 or subsequent report sections. Please edit the Five-Year Review to include the history of all IRs. For each Parcel Letter, DTSC recommends creating an additional table listing the IRs and their history and status.
8. Section 6.4.1.1, Nonaqueous Phase Liquid Removal and Treatment: The text states, "ISS treatment will be initiated in winter 2023". Please revise the text to state when this in situ stabilization (ISS) treatment began or revise the anticipated initiation date.
9. Section 6.4.2.1, Durable Cover Installation & Landfill Gas Controls and Monitoring: This section states that the Phase 3 [Remedial Action (RA)] is "anticipated to be completed in summer 2023." Please revise the text to state if the Phase 3 RA was completed or revise the anticipated completion date. Please also update the subsequent paragraph, which describes construction planned "prior to spring 2024."
10. Section 6.4.2, Landfill Gas Monitoring: This section describes recent detections of excess methane at a monitoring well and notes that readings continue to remain elevated to date. This section should be updated to reflect recent developments, including methane extraction, reduction of methane exceedances below action levels, and the installation of a confirmation well outside of the landfill boundary.

Michael Pound
April 30, 2024

11. Appendix A, general comment: Elements of the CRA are not consistent with DTSC's 2023 draft Sea Level Rise (SLR) Guidance. Most significantly, DTSC's guidance calls for evaluating resiliency to 3 feet of SLR by 2050 and 6 feet by 2100. The CRA also does not evaluate king tide events or the interaction between sea level rise, groundwater rise, king tides, and/or storm events. Even so, this screening-level assessment recommends site-specific investigations. DTSC concurs with these recommendations and strongly urges the Navy to use DTSC's SLR guidance in these additional studies.
12. Appendix A, general comment: During a public meeting and presentation on April 22, 2024, Navy staff (Arun Gavaskar, NAVFAC EXWC), discussing the evaluation of groundwater rise, noted to DTSC that the Navy had taken surface water conductivity measurements following storm events to assess potential communication between surface water and groundwater. These data and any other data collected for the CRA should be included and discussed for their use in the recommended site-specific follow-up studies.
13. Appendix A, general comment: During the Five-Year Review Site Inspection on January 23, 2024, DTSC observed significant stormwater inundation in Parcel E. The submerged area was near the southern end of a bioswale, where 100-year storm events will cause transient inundation by 2035 (Figure 2-4) and groundwater is predicted to emerge by 2065 (Figure 3-2). Navy personnel (Doug Delong, CSO) noted that the bioswale floods routinely and appears to be tidally influenced. The CRA should recommend that follow-up studies evaluate the performance of bioswales to control stormwater inundation and the potential impact of tidal influence on groundwater to stormwater communication in the swales.
14. Appendix A, Section 2.3: The text states, "Storm events of a certain magnitude trigger an ad hoc inspection with repairs." DTSC requests further details on what defines the magnitude trigger, as well as ad hoc inspection details. DTSC notes that ad hoc inspections for storm events at or around the defined magnitude trigger should occur immediately after or near the end of the storm event due to the potential early signs of sea level rise. An inspection photo log detailing pictures and a map indicating direction of the view of the photos should be included to document the potential effects of early signs of sea level rise.
15. Appendix A, Section 3.1: The last paragraph states, "[groundwater table emergence] is projected to appear in several parcels by 2065." Please revise the text to list the expected parcels.
16. Appendix A, Section 5.1: The list of parcels with projected groundwater emergence in 2065 is missing Parcel E-2. Please revise.

Michael Pound
April 30, 2024

17. Appendix A, Section 5.3.1: This section largely assumes that all volatile organic compound (VOC) plumes will be successfully remediated before climate impacts occur in 2035. This is not an appropriate assumption for such a screening level assessment. Given the complex nature of the site, past delays in remediation efforts, and the potential for site conditions or remediation goals to change in the future, this assessment should conservatively assume that vapor intrusion is a potential risk until such time as VOCs are fully mitigated to better inform future Five-Year Reviews.
18. Appendix A, Section 5.3.3: The text states: "Similarly, in Parcel B-2 (IR 26), annual monitoring indicates an exceedance for mercury, but additional remedies are planned to address that." As noted in comment 5 above, no such additional remedies have been selected. Please remove this sentence.
19. Appendix A, Section 5.3.6: As noted in comment 4 above, the regulatory agencies have unaddressed concerns about the potential migration of lead contamination from groundwater to the freshwater wetlands. The vulnerability and resiliency assessment should be revised to assume that groundwater within 3 feet below ground surface (bgs), as identified in Figure 2-5, emerging groundwater in the freshwater wetland, and surface runoff from storms may be in contact with contaminated material.
20. Appendix A, Table 5-2: The impacts at Parcel E-2 are not consistent with the impacts identified in Table 2-3. The table should be updated to reflect the impacts in Table 2-3 and revised based on comment 19 above. Section 6.6.1.2 of the Five-Year Review should be similarly revised.
21. Appendix A, Figure 3-1: The figure appears to indicate groundwater emergence at the northernmost point of the boundary between IR 7/18 and Parcel B-1, but this is not reflected in Table 2-2 or the text. Please confirm and revise as necessary.

If you have any questions, please contact me at (510)-540-3840 or via email at Michael.Howley@dtsc.ca.gov.

Sincerely,



Michael Howley
Project Manager
Site Mitigation and Restoration Program – Berkeley Office
Department of Toxic Substances Control

Michael Pound
April 30, 2024

Cc (via email):

MarieneI Basiga, DTSC, MarieneI.Basiga@dtsc.ca.gov
Kim Walsh, DTSC, Kimberly.Walsh@dtsc.ca.gov
Brooks Pauly, Navy, brooks.pauly2.civ@us.navy.mil
Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Karen Ueno, USEPA, Ueno.Karen@epa.gov
Andrew Bain, USEPA, Bain.Andrew@epa.gov
Mary Snow, Water Board, Mary.Snow@waterboards.ca.gov
Ryan Casey, SFDPH, Ryan.casey@sfdph.org
Lila Hussain, OCII, Lila.Hussain@sfgov.org
Jamie Egan, Jacobs, Jamie.Egan@jacobs.com

This page intentionally left blank.



Meredith Williams, Ph.D., Director
700 Heinz Avenue
Berkeley, California 94710-2721



June 3, 2024

Michael Pound
NAVFAC BRAC PMO West
33000 Nixie Way
Building 50, Floor 2
San Diego, California 92147
michael.i.pound.civ@us.navy.mil

RESPONSES TO COMMENTS ON FIFTH FIVE-YEAR REVIEW REPORT FOR THE
HUNTERS POINT NAVAL SHIPYARD IN SAN FRANCISCO, CALIFORNIA (SITE
CODE: 200050)

Dear Michael Pound:

The Department of Toxic Substances Control (DTSC) has reviewed the draft response to comments table (RTCs or RTC table) for comments from DTSC, the San Francisco Bay Regional Water Quality Control Board (Water Board), and the United States Environmental Protection Agency (USEPA) on the *Draft Fifth Five-Year Review Report*, (draft Five-Year Review) for the former Hunters Point Naval Shipyard in San Francisco, California. The RTC table was initially provided to DTSC on May 15, 2024. A revised RTC table was provided on May 28, 2024, following two days of collaborative meetings between the regulatory agencies and the Navy. DTSC appreciates the Navy's ongoing commitment to productive communication and cooperation with the regulatory agencies.

At the Navy's request, DTSC is providing feedback on the RTCs in advance of the accompanying revisions being incorporated into the *Draft Final Fifth Five-Year Review Report*, anticipated later this month. These follow-up comments are intended to clarify specific information in the responses. In general, DTSC will not consider any of the comments as resolved until the revisions are confirmed in the Draft Final document. DTSC also continues to coordinate with the Water Board and USEPA to ensure their comments are satisfactorily addressed. In particular, DTSC recognizes and supports the Water Board's role in protecting water quality. DTSC's comments are presented below.

Michael Pound
June 3, 2024

DTSC Comments:

1. General Comment: Several of DTSC's original comments (DTSC comments 2, 3, 4, 5, and 6) requested changes to the Issues/Recommendations tables of the document, in both the executive summary and parcel-specific sections (e.g., Tables 3-8, 4-8, and 6-7). The RTC table describes revisions to specific sections of the text, but does not refer to similar revisions in the Issues/Recommendations tables. These tables are the primary information summary for the public, and a critical means of tracking progress between this Fifth Five-Year Review and the upcoming Sixth Five-Year Review. The RTC table should note which tables will be revised in the Draft Final document.
2. Response to DTSC Comment 2: Per the Climate Resilience Assessment (CRA) in Appendix A, remedy resilience is likely to be impacted by sea level rise. More robust site-specific analyses are required based on results of this evaluation and therefore the Navy's RTCs propose a prioritization meeting in November 2024, with the first site-specific study, at Parcel D-1, beginning in 2025. DTSC requests a target month and year be specified for the first site-specific study scoping meeting, or that the Navy provide clarification in the RTCs that the proposed prioritization meeting includes planning for the details of the site-specific studies with the regulatory agencies. Per DTSC's 2023 Sea Level Rise Guidance, an adaptation plan is required because potential effects of sea level rise were witnessed during the January 2024 site visit and the CRA confirms future sea level rise impacts for the site. In adaptation planning, the remedy or action should be evaluated to determine adaptive capacity to sea level rise. Please include in the text that the upcoming site-specific/prioritization meetings will include discussion of an adaptation plan or a similar document.
3. Response to DTSC Comment 6: The revised Parcel C Protectiveness Statement notes that investigation of the B-Aquifer and Fractured Water-Bearing Zone (F-WBZ) "will take approximately 5 years to complete." This statement should also note that the F-WBZ investigation work plan has already been reviewed by the regulatory agencies and further describe the anticipated milestones for field work, data collection, and reporting within that total five-year period.
4. Response to DTSC Comment 11: DTSC appreciates the commitment to assessing sea-level rise impacts in the year 2100 in the site-specific assessments, consistent with DTSC's 2023 Sea-Level Rise Guidance. Please include in the Issues/Recommendations section, the Other Findings section, and the CRA that the Navy plans to evaluate the Year 2100 impacts as a next step in conjunction with the site-specific studies for all parcels. Please edit the RTC to indicate that such wording was added to the text and in which section. Include

Michael Pound
June 3, 2024

reference that the Year 2100 evaluation is consistent with the DTSC 2023 Sea Level Rise Guidance and the Ocean Protection Council's 2022 State Agency Sea-Level Rise Action Plan for California.

5. Response to DTSC Comment 12: The comment response describes field measurements taken for surface water conductivity during the CRA to screen ponded surface water following storm events for similar characteristics to groundwater or Bay water. Please provide additional details on the locations of these conductivity measurements (i.e., which topographic trough), the units for readings recorded (i.e., in milliSiemens per meter), and the title and date of the deliverables reporting those data. If the Navy does not intend to report the data, please explain why not and describe how similar data collection efforts may be incorporated into the site-specific sea-level rise assessments.
6. Response to DTSC Comment 14: The comment response states that a major storm event that would trigger ad hoc inspections "is defined in the Parcel E-2 [Operations and Maintenance Plan (O&M Plan)] as '4.17 inches of precipitation or more over a 24-hour period (24-hour, 25-year storm).'" Section 2.6.1 of the most recent O&M Plan, *Final Operation and Maintenance Plan Remedial Action, Parcel UC-3*, dated July 2018, states that "Annual inspections will be performed during the rainy season, preferably after the first qualifying storm event, to enable determination of its effectiveness in providing drainage to the durable cover. A qualifying storm event is one that produces precipitation of 0.5 inches or more over a period of 48 hours." The 2012 *Interim Monitoring and Maintenance, Landfill Gas Control System, Parcel E-2 Landfill* similarly describes "a significant rain event (1/2 inch or greater)". Please advise if a different O&M Plan is referenced in the RTC or resolve the inconsistency.

If you have any questions, please contact me at (510)-540-3840 or via email at Michael.Howley@dtsc.ca.gov.

Sincerely,



Michael Howley
Project Manager
Site Mitigation and Restoration Program – Berkeley Office
Department of Toxic Substances Control

Cc (via email):

Mariene Basiga, DTSC, Mariene.Basiga@dtsc.ca.gov
Kim Walsh, DTSC, Kimberly.Walsh@dtsc.ca.gov

Michael Pound
June 3, 2024

Brandon Mills, Navy, brandon.s.mills13.civ@us.navy.mil
Wilson Doctor, Navy, wilson.e.doctor.civ@us.navy.mil
Karen Ueno, USEPA, Ueno.Karen@epa.gov
Andrew Bain, USEPA, Bain.Andrew@epa.gov
Daniel Haskell, USEPA, Haskell.Daniel@epa.gov
Mary Snow, Water Board, Mary.Snow@waterboards.ca.gov
Alexander Valentine, Water Board, Alexander.Valentine@waterboards.ca.gov
Ryan Casey, SFDPH, Ryan.casey@sfdph.org
Lila Hussain, OCII, Lila.Hussain@sfgov.org
Jamie Egan, Jacobs, Jamie.Egan@jacobs.com



April 30, 2024

Via email only

Department of the Navy
Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure
Program Management Office West
Attn: Michael Pound, BEC
33000 Nixie Way, Bldg 50, Second Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Re: U.S. EPA comments on the Draft Fifth Five-Year Review Report for the Hunters Point Naval Shipyard, San Francisco, CA, November 2023

Dear Mr. Pound:

The U.S. Environmental Protection Agency ("EPA") is providing comments to the U.S. Navy on its *Draft Fifth Five-Year Review ("FYR") Report for the Hunters Point Naval Shipyard, ("HPNS")*, ("Report"), dated November 2023. EPA appreciates the Navy's first program-wide effort to incorporate a Climate Resiliency Assessment ("CRA") into a FYR Report. Moreover, EPA appreciates the multiple efforts in which the Navy has collaborated with the HPNS Federal Facility Agreement ("FFA") participating agencies as well as the public, to make the draft document available for review and discussion.

Although we differ on some important issues in this draft document, the Navy has demonstrated a commitment to substantively work through technical and programmatic issues with the FFA Parties, including during the recent technical meeting on April 25 to review the FYR Protectiveness Determinations and CRA report as well as during bi-weekly FYR technical discussions. We share the FFA Parties' goal of reaching consensus on the final FYR by July 31. As such, EPA's comments reflect this draft stage, and we also look forward to working with the Navy and the state to evaluate public comments, which are due to the Navy by the extended public comment period (albeit after the agencies') ending May 7.

Our formal comments contained herein are not exhaustive and focus primarily on the summary protectiveness statements and recommendations to address several substantive remedy protectiveness questions. EPA is first providing comments on the CRA report as a potentially

significant risk driver with respect to the parcel-specific issues, recommendations and protectiveness determinations.

Climate Resiliency Assessment, Appendix A

The assessment looked at certain climate-related events and identified future, potential vulnerabilities to human and San Francisco Bay receptors from heavy metals and low-level radiological objects due to groundwater emergence. The draft CRA recommends that parcel-specific assessments be performed to determine if the projected climate change vulnerabilities increase CERCLA risk at this Site. However, the Navy does not specifically relate its CRA findings to each parcel's FYR protectiveness evaluation. Rather, the Navy makes generalized statements about projected climate impacts on a site-wide basis. In the Final Report, EPA recommends that the Navy commit to prioritize and commence parcel-specific climate vulnerability assessments prior to the Sixth FYR to address probable impacts anticipated as soon as 2035.

Additionally, EPA acknowledges that the Navy's CRA document substantively applies EPA's Climate Vulnerability Assessment ("CVA") guidance criteria. However, the Navy only projects climate impacts through 2065, which is less conservative than the 100-year scenario EPA, as well as the state, use. Lastly, EPA requests that the Report formally include criteria for evaluating extreme precipitation event projections and correlation and analysis of groundwater contaminant concentrations, when collecting water-level elevation measurements.

Navy's draft Protectiveness Determinations for Parcels B-2, C, and E-2

- **Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel B-2, IR-26, Protectiveness Determination:** Based on treatment efficacy uncertainties associated with the treatment for mercury in groundwater and the potential ecological impact on the San Francisco Bay, EPA does not support the Navy's *Short-term Protective* determination. Because of this uncertainty, and the agreed-upon need to enhance treatment delivery and/or explore other treatment options, EPA supports a Protectiveness Deferred determination. A *Short-Term Protective* determination is not appropriate because the MetaFix treatment for mercury in groundwater is not achieving its performance goals at two monitoring well locations, IR26MW49A and IR26MW71A. EPA recognizes, as documented by the Navy, that MetaFix could not be injected at certain locations due to limitations of the injection method. At our April 25, 2024, meeting, the Federal Facility Agreement (FFA) Parties discussed whether the Navy continues its plan to implement the enhanced delivery of Metafix, although the FFA regulatory parties believe that other treatment options need to be explored. The Navy agreed that the final *Fifth Five-Year Review Report* will include a date to submit a new FFA primary document, such as a technical memorandum. EPA expects the new primary document will be submitted as soon as practicable, and well ahead of the next Five-Year Review. Among other things, the new primary document should evaluate and analyze all available mercury groundwater monitoring data, including data collected from March 2018 to September 2022, and mercury exceedances at IR26MW49A and IR26MW71A,

and propose next steps, including additional treatment options (tri-Agency letter of November 23, 2021).

If the Navy is unable to commit to develop and provide a primary document within a timeline acceptable to the FFA regulatory parties, EPA may need to consider the effect that the continued lack of sufficient treatment performance, and groundwater mercury data and documentation may have on Parcel B-2.

- **Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel C, B-aquifer, Protectiveness Determination:** This comment addresses the B-aquifer characterization. EPA does not support the Navy's draft *Short-term Protective* determination but rather a *Protectiveness Deferred* determination because from EPA's perspective, for groundwater, information has come to light that calls into question the protectiveness of the remedy (Question C of the Report), and more information is needed to determine protectiveness and whether an unacceptable risk exists.

In general, both the A-aquifer and B-aquifer (and bedrock) groundwater flows towards the San Francisco Bay. The Navy's cross-sections in the RU-C2 area confirm there are gaps or holes in the aquitard that enable communication between the A- and B-aquifers, and the Navy's data confirm there is contamination in the underlying B-aquifer at RU-C2 downgradient of the gaps or holes, and in the deep Fractured-Water Bearing Zone (deep F-WBZ) at RU-C4. Consequently, the A-aquifer cannot be isolated as protective.

In response to FFA regulatory concerns, the Navy has agreed to, but has not initiated, a full and timely characterization of the B-aquifer in the RU-C2 area, including the upper F-WBZ below and in contact with the B-aquifer. The Navy has also agreed to monitor B-aquifer wells as part of performance monitoring of the groundwater treatment of the A-aquifer at RU-C2 (RAWP Phase III). With respect to the Deep F-WBZ at RU-C4, which was the subject of an informal dispute brought by the Regional Water Quality Control Board and EPA, the Navy has submitted a draft workplan to fully characterize the nature and extent of contamination and groundwater flow patterns to the San Francisco Bay. The workplan has not been finalized and work has not yet commenced.

For the Final *Fifth Five-Year Review Report*, EPA requires a list of the primary documents that are anticipated to be developed to perform the full and timely characterization of the B-aquifer in the RU-C2 groundwater area, and the Navy's anticipated timeframe for developing these documents. An anticipated timeframe for the performance monitoring of the groundwater treatment at RU-C2 in both the A- and B-aquifers should also be provided. At the April 25, 2024, meeting, the Navy expressed agreement in concept that these commitments have been made.

If the Navy is unable to commit to develop and provide the requested primary

documents within a timeline acceptable to the FFA regulatory parties, EPA reserves its right to reassess our evaluation of B-aquifer and Deep F-WBZ groundwater at Parcel C.

- **Five-Year Review Summary Form, Protectiveness Statements, page xxi, Parcel E-2, Protectiveness Determination:** EPA agrees with the Navy's *Will Be Protective* determination, however, additional actions are requested in the Final *Fifth Five-Year Review Report*. For landfills of this nature, the presumptive remedy in both the CERCLA and RCRA programs is to "cap and contain the waste," and include appropriate environmental controls and monitoring for, at a minimum, stormwater, groundwater, and landfill gas. After a careful review and comparison of cleanup alternatives against EPA's nine evaluation criteria, the Parcel E-2 landfill ROD selected a remedy consistent with the presumptive remedy approach yet included several special design elements to account for the unique nature and location of this particular landfill. EPA agrees that Parcel E-2 is still undergoing remedy construction, including relatively minor work on the cover system, the completion of the landfill gas extraction and conveyance system, and the completion of the freshwater (FW) and tidal wetlands.

Notwithstanding EPA's agreement that the remedy is still under construction, given that the Navy has deferred responding to Question A ("is the remedy functioning as intended by the decision documents?") in the Report, and given that certain fundamental landfill containment and control facilities, such as the nearshore slurry wall, the upland slurry wall, and the landfill cover system have been constructed, EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. For the Final *Fifth Five-Year Review Report*, EPA requires a list of the primary documents that are anticipated to be developed to perform the evaluation work, and the Navy's anticipated timeframe for developing those documents. At the April 25, 2024, meeting, the Navy expressed agreement in concept but awaits further information from the FFA regulatory parties, which is forthcoming in a tri-Agency letter.

If the Navy is unable to provide the required list and schedule in the Final *Fifth Five-Year Review Report*, EPA may need to consider the effect that the lack of sufficient groundwater data and documentation may have on potential performance issues at Parcel E-2.

In addition, EPA has conveyed, most recently at the April 25, 2024, meeting, that the Navy needs to amend the appropriate primary document to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. At the April 25 meeting, the Navy agreed in principle and will propose the primary document that must be amended and an anticipated timeframe for modifying that primary document.

Other Comments:

1. **Air Monitoring Program:** Throughout the HPNS Site, the Navy implements a robust dust control and air monitoring program. This program includes requirements for dust control activities, such as wetting soil during excavation and stockpiling, covering soil stockpiles with soil fixative, tarping loads of soil when transported, etc., in addition to monitoring real-time PM10, asbestos, radionuclides of concern, and filter-based PM10, Total Suspended Particulates, and metals. Air monitoring stations are placed throughout the site to evaluate community exposure. The FYR does not mention these activities, in spite of significant interagency and community coordination. Please add information about the Navy's dust control and air monitoring program, summarize data collected over the last five years and discuss the impact on short-term protectiveness.
2. **The Fourth Five-Year Review, Parcel B Issues, Recommendations, and Follow-up Actions:** There was a criticism of the Fourth FYR that has not been described in sufficient detail. EPA needs confirmation that this issue is addressed:

"The regulatory agencies do not agree with the Navy's risk assessment methodology used to reduce the ARICs for VOC vapors." This is described in tables for Parcels B-1 and B-2, in Table 3-4 and elsewhere (e.g., Table 5-5, Fourth Five-Year Review Parcels D-1, D-2, UC-1, and G Issues, Recommendations, and Follow-up Actions, for Parcels D-1 and G).
3. **Misrepresentation of evidence that TCE biodegradation is an effective remedy:** Multiple times in the document, (e.g., Section 3.5.1 "Question A: Is the remedy functioning as intended by the decision document?"; Table 3-3 "Parcel B Remedial Action Summary and Expected Outcomes"), the claim is made that: *"The presence of VC demonstrates that TCE biodegradation is occurring in groundwater in Parcel B-1 (TRBW, 2023)."* A similar statement is made for RU-C1 (Section 4.4.1.1, Remedy Implementation, p. 124): *"The presence of VC indicates that biodegradation is occurring."* Although appearance of VC may indicate that reductive dechlorination is occurring (or has occurred), it is not necessarily evidence that *in situ* biodegradation is working as intended. Stalling of biodegradation and accumulation of VC can pose more risk than the presence of the parent compound (TCE), as VC is a more potent carcinogen than PCE and TCE.
4. **Five-Year Review Summary Form, Review Status, Triggering Action Date and Due Date, page xvii; and Section 2.6 Next Five-Year Review, pg. 2-2:** As EPA outlined in its

November 16, 2023, letter, the trigger action date is the Remedial Action Start date, not the signature date of the Fourth FYR. As such, the statutory due date for the Sixth FYR is November 8, 2028. Please correct the table to reflect the statutory due date.

5. **Five-Year Review Summary Form, Issues/Recommendations, page xviii, second item, Changed Site Conditions, Parcel D-1, Other Findings:** With regards to Radiological Objects, and other wastes left in place, and based on the Navy's initial evaluation for potential, permanent groundwater emergence impacts at Parcel D-1 in 2035 (p. 30 of the Report), EPA recommends that the Navy prioritize and commence a Parcel D-1 specific CRA vulnerability assessment study to address groundwater emergence prior to the Sixth FYR.
6. **Section 1.1 Purpose and Approach, page 1-1, second paragraph, last line:** see Comment 4 above.
7. **Section 1.4.1 Per and Polyfluoroalkyl Substances, pg. 1-7, 3rd paragraph, 1st line:** The document states "Current exposure pathways for PFAS are potentially incomplete at HPNS." Immediately following, the document states that there is a prohibition to using drinking water yet provides no discussion of other potential exposure pathways, such as to the SF Bay environment. There's no discussion of what uncertainty leads the Navy to state that the exposure pathway is only "potentially" incomplete. Is this because the PFAS investigation is incomplete? Please provide additional discussion to explain the statement.
8. **Section 1.4.3.1 Progress since the Fourth Five-Year Review, page 1-9:**
The addendum evaluating the protectiveness of remedial goals for building structures, as described, does not accurately reflect several important facts/updates. First, EPA did not approve this addendum nor the follow-on building re-testing workplans due to our collective inability to reconcile technical differences between the Navy's use of the RESRAD Build model and EPA's Building Preliminary Remediation Goal calculator. More importantly, based on a substantive change in building reuse plans and recent congressional authorization, the Navy is now preparing to demolish and dispose of all potentially radiologically impacted buildings, except two historical structures, rather than certify them for unrestricted reuse. The main objective moving forward, therefore, should be to ensure building materials are characterized sufficiently to help determine how to safely protect human health and the environment during demolition and how to dispose of the debris in a regulatory-compliant way. To that end, we appreciate that the Navy is working closely with the California Department of Public Health to identify the protocol the Navy will be using to clear buildings for disposal. Once clarified, while the ROD already contemplates building demolition as a part of the remedy, EPA recommends the FFA members more clearly document the approach that the Navy will be using for the disposal of the building materials, as well as the significantly increased disposal costs, in the appropriate post-ROD change document.

9. **Section 2.2 Site Inspections, pg. 2-1:** Please update the narrative to indicate a second site inspection was provided on January 23, 2024, specifically for the benefit of the FFA regulators and city representatives.
10. **Section 3.5.2.2 HHRA Analysis, Former Parcel B, pg. 75; Section 4.5.2.2 HHRA Analysis, Former Parcel C, pg. 132; Section 5.5.2.2 HHRA Analysis, Former Parcel D, pg. 191; and Section 6.5.2 Question B, Parcels E and E-2, pg. 244:** The report contains vague references to changes in Construction Worker exposure scenario - "*There may be changes with HHRA analysis for the construction worker scenario.*" It is not clear specifically what change is being referred to. Please clarify in the draft final FYR.
11. **Section 3.7.3 Navy's Parcel B-2 Draft Protectiveness Determination – *Short-term Protective*.** EPA's Response – *Protectiveness Deferred*, as discussed above.
12. **Section 4.7.1 Navy's Parcel C, Draft Protectiveness Determination – *Short-term Protective*.** EPA's Response – *Protectiveness Deferred*, as discussed above.
13. **Section 6.7.1.2 Navy's Parcel E-2, Draft Protectiveness Determination – *Will Be Protective*.** EPA's Response – *Will Be Protective*, but additional actions are requested, as discussed above.

EPA appreciates the Navy's substantial work on the Draft Five-Year Review Report and look forward to discussing and resolving comments. If you have any questions regarding our comments, please feel free to contact me at (415) 972-3167.

Sincerely,



Digitally signed by
ANDREW BAIN
Date: 2024.04.30
23:25:49 -07'00'

Andrew Bain
Lead Remedial Project Manager
Northern California Federal Facilities Section
Superfund Division

cc: Mary Snow, SF Bay RWQCB
Michael Howley, DTSC

This page intentionally left blank.



June 5, 2024

Via email only

Department of the Navy
Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure
Program Management Office West
Attn: Michael Pound, BEC
33000 Nixie Way, Bldg 50, Second Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Re: U.S. EPA Response to the Navy Draft Responses to Consolidated Agency Comments on the Draft Fifth Five-Year Review Report for the Hunters Point Naval Shipyard, San Francisco, CA, November 2023

Dear Mr. Pound:

The U.S. Environmental Protection Agency ("EPA") is providing our response to the U.S. Navy's draft Responses to Consolidated Agency Comments (redline-strikeout version transmitted by you on May 28, 2024), on the *Draft Fifth Five-Year Review ("FYR") Report for the Hunters Point Naval Shipyard ("HPNS")*, dated November 2023.

EPA appreciates the Navy's efforts to work with the FFA Regulatory Parties through a series of focused meetings on the FYR Report and Climate Resiliency Assessment Report, most recently on April 25, May 15, and May 16. We continue to support the goal of reaching consensus on the final FYR Report, if possible, by July 31. Key to reaching this goal is a clear understanding and agreement among the FFA Parties and reflected in the FYR Report on the path forward regarding protectiveness statements.

EPA's response contained and attached herein focuses on resolution of our April 30 concerns regarding protectiveness statements, as determining if a remedy is or will be protective of human health and the environment is the primary purpose of a five-year review. EPA's response is below, and on the attached table. The table is an annotated version of the one that you transmitted on May 28. It adds another column to your table labeled "U.S. EPA Response (6/4/2024)" and under the column labeled "Navy Response (May 2024)" we offer suggested redline-strikeout ("RLSO") in blue to help address EPA concerns, and possibly facilitate the

process. The red and black text in that same column are the Navy's (cut and pasted from your original table).

Climate Resiliency Assessment, Appendix A

EPA appreciates the additional narrative including the Navy's commitment to conceptually address near- and long-term impacts described in the proposed CRA copy revisions. EPA requests that the Navy provide a specific target timeframe in 2025 for the prioritization scoping meeting.

Five-Year Review, Protectiveness Statements, Parcels B-2, C, and E-2

See attached annotated table for EPA response to the Navy's draft response to comments Nos. 1, 2, and 3, and Other Comments Nos. 11, 12, and 13. (Navy numbering per Navy's "Index of Agency Comments by Category," also transmitted by you on May 28). As indicated above, EPA response is under a new added column ("U.S. EPA Response (6/4/2024)") and our suggested RLSO is in [Blue](#) under the column "Navy Response (May 2024)," which we provided to help address EPA's concerns and facilitate the process. The red and black text in that same column are the Navy's.

Other Comments:

1. **Air Monitoring Program:** EPA appreciates the additional description about the site-wide air monitoring program implementation status and its importance to the regulatory and local communities.
2. **The Fourth Five-Year Review, Parcel B-1 Issues, Recommendations, and Follow-up Actions:** The RTC refers to Section 8 ("Revised Preliminary Soil Gas Action Levels and Post-Removal Human Health Risk Assessment Methodology") of the *Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123* (September 2023) for the Navy's approach to evaluating VI ARICs. Regarding the approach to establishing site-specific and chemical-specific soil-gas attenuation factors (AFsg) described in Section 8.3 of that 2023 document, EPA has multiple concerns with the technical defensibility of the approach. Section 8.3 (*Tier 2*) lists six bullets to describe elements of the approach to establishing site-specific AFsg values. Only one of these, bullet 2, addresses a scientifically defensible approach to establishing site-specific AFsg values, namely, the collection of co-located site-specific indoor air – subslab or near-source soil gas data. What is not mentioned in this bullet, but should be, is that the paired data should be collected contemporaneously in both cold and warm seasons with HVAC systems off and with a sufficient amount of paired data that statistically robust AFsg values could be determined, and the values should be consistent with the RME approach (i.e., not a central tendency approach). Such an empirical approach would likely be acceptable, pending evaluation of the work plan and resulting data by agency subject matter experts, including statisticians. Other bullets describe methods that are unacceptable

for reasons that are briefly described here. Bullet 1 describes microbial studies of aerobic degradation of vinyl chloride, which is not the domain of attenuation factors based on mass transfer of a chemical between different media. Biological mitigation is addressed in the site-specific soil vapor concentrations themselves and should not be treated as a physical partitioning constant. In any case, it would need to be rigorously demonstrated that laboratory microbial studies have direct relevance to *in situ* conditions and that observed degradation parameters (e.g., kinetics) could be treated as constant without consideration of site-specific conditions (e.g., populations of metabolically active bacteria, temperature, moisture content, etc.). Use of the EPA spreadsheet adaptation of the Johnson and Ettinger (1991) model (bullet 4) would not be sufficiently representative of site-specific conditions to justify establishing AFsg values; note that the “JE_README” tab of the EPA J&E spreadsheet explicitly states in red, boldface font that “The J&E model does not replace the EPA VISLs [Vapor Intrusion Screening Levels].” Similarly, evaluation of soil lithology (bullets 3 and 5) is not sufficiently rigorous to quantitatively establish site-specific AFsg values. Published state-wide (California) empirical studies of attenuation factors are also not defensible for establishing site-specific AFsg values unless it can be definitively demonstrated that the state-wide database is applicable to the site of interest. In essence, site-specific AFsg values should be based on a robust database of site-specific measurements of paired indoor air – subslab or near-source soil vapor data. Further, it does not enhance a sense of objectivity to state the conclusions of studies before they are conducted; almost every bullet, including bullet 2, which describes empirical studies that have presumably not been conducted yet, states that the approach will “demonstrate that the USEPA (2015) generic AFsg of 0.03 is overly conservative” (or words to that effect).

3. **Misrepresentation of evidence that TCE biodegradation is an effective remedy:**
Thank you for addressing the comment.
4. **Five-Year Review Summary Form, Review Status, Triggering Action Date and Due Date, page xvii; and Section 2.6 Next Five-Year Review, pg. 2-2:** EPA continues to disagree with the Navy’s interpretation about the signature date. We note that the Navy/Marine policy does not preclude conducting the subsequent FYR sooner, consistent with EPA’s stated statutory policy and respectfully requests that the Navy reconsider its position.
5. **Five-Year Review Summary Form, Issues/Recommendations, page xviii, second item, Changed Site Conditions, Parcel D-1, Other Findings:** EPA requests that the Navy commit to a specific date in 2025 to produce a primary document and begin scoping the monitoring well construction and ground elevation details in Parcel D-1 data (and in other Parcels projecting groundwater emergence).
6. **Section 1.1 Purpose and Approach, page 1-1, second paragraph, last line:** see Comment 4 above.

7. **Section 1.4.1 Per and Polyfluoroalkyl Substances, pg. 1-7, 3rd paragraph, 1st line:** EPA appreciates the clarification and agrees with the description.
8. **Section 1.4.3.1 Progress since the Fourth Five-Year Review, page 1-9:**
EPA appreciates the clarification.
9. **Section 2.2 Site Inspections, pg. 2-1:** EPA appreciates acknowledgment of the addition.
10. **Section 3.5.2.2 HHRA Analysis, Former Parcel B, pg. 75; Section 4.5.2.2 HHRA Analysis, Former Parcel C, pg. 132; Section 5.5.2.2 HHRA Analysis, Former Parcel D, pg. 191; and Section 6.5.2 Question B, Parcels E and E-2, pg. 244:** EPA appreciates the clarification.

EPA looks forward to a mutually acceptable resolution of our concerns to help enable the goal of consensus on the final FYR Report by July 31. If you have any questions regarding our response, please feel free to contact me at (415) 972-3167.

Sincerely,

Andrew Bain
EPA Region 9
Lead Remedial Project Manager
Northern California Federal Facilities Section
Superfund Division

Attachment

cc with Attachment:
Mary Snow, SF Bay RWQCB
Michael Howley, DTSC

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
1	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel B-2, IR-26, Protectiveness Determination	Based on treatment efficacy uncertainties associated with the treatment for mercury in groundwater and the potential ecological impact on the San Francisco Bay, EPA does not support the Navy's <i>Short-term Protective</i> determination. Because of this uncertainty, and the agreed-upon need to enhance treatment delivery and/or explore other treatment options, EPA supports a Protectiveness Deferred determination. A <i>Short-Term Protective</i> determination is not appropriate because the MetaFix treatment for mercury in groundwater is not achieving its performance goals at two monitoring well locations, IR26MW49A and IR26MW71A. EPA recognizes, as documented by the Navy, that MetaFix could not be injected at certain locations due to limitations of the injection method. At our April 25, 2024, meeting, the Federal Facility Agreement (FFA) Parties discussed whether the Navy continues its plan to implement the enhanced delivery of Metafix, although the FFA regulatory parties believe that other treatment options need to be explored. The Navy agreed that the final <i>Fifth Five-Year Review Report</i> will include a date to submit a new FFA primary document, such as a technical memorandum. EPA expects the new primary document will be submitted as soon as practicable, and well ahead of the next Five-Year Review. Among other things, the new primary document should evaluate and analyze all available mercury groundwater monitoring data, including data collected from March 2018 to September 2022, and mercury exceedances at IR26MW49A and IR26MW71A, and propose next steps, including additional treatment options (tri-Agency letter of November 23, 2021). If the Navy is unable to commit to develop and provide a primary document within a timeline	<p>From the Navy's perspective, there are multiple lines of evidence presented in the Five-Year Review that suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in the April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to "Protectiveness Deferred" determination. The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions need to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A technical memorandum primary document presenting the path forward will be prepared/finalized as soon as practicable and not later than July 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</u></p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows: <u>After completion of the 3-year post-ISS treatment performance monitoring, the FFA Regulatory</u></p>	<p>It is Navy's opinion, not necessarily shared by the FFA regulatory parties, that multiple lines of evidence are presented in the Five-Year Review that suggest the concentrations are unlikely to exceed 0.6 µg/L. A higher level of direct proof rather than indirect weight of evidence is needed to better determine impact to the Bay.</p> <p>At the April 25, 2024 meeting, the FFA regulatory parties, including EPA, expressed concern with a protracted Navy effort given the issue is over three years old. EPA expects that the Navy will complete the final primary document as soon as practicable and not later than the end of July 2025. The primary document must include additional treatment options that have been initially screened for further evaluation. EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing the primary document.</p> <p>Please cite the date of the letter (November 23, 2021) and do not attempt to interpret what is meant by the tri-agency letter. EPA quotes the letter directly.</p> <p>As discussed at the April 25, 2024 meeting, the FFA Regulatory Parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

**RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2
EPA's Suggested RLSO to Help Address our Concerns are in Blue**

No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		acceptable to the FFA regulatory parties, EPA may need to consider the effect that the continued lack of sufficient treatment performance, and groundwater mercury data and documentation may have on Parcel B-2.	<p><u>Parties/agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that "mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan." asserting that the remedy failed and was not protective of the Bay because of continuing exceedances of the trigger level (TL) (0.6 µg/L) at "sentinel" wells (IR26MW49A, IR26MW51A, and IR26MW71A) which are representative of a discharge to the Bay. Because the remedy did not achieve the 0.6 µg/L performance goal, the Agencies require that focused alternative treatments and treatment methodologies should be evaluated and, if warranted and accepted by the FFA regulatory parties, implemented (EPA, DTSC, and Regional Water Board, 2021).</u></p> <p><u>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA</u></p>	areas of prior injection refusal), and EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. However, as stated in the November 23, 2021 tri-agency letter, EPA continues to expect that additional treatment options need to be screened, evaluated and pursued by the Navy. The Navy needs to acknowledge this.

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</u></p> <p><u>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</u></p> <ul style="list-style-type: none"> <u>Completion of source removal in 2008 via a time-critical removal action (Insight, 2009)</u> <u>Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 locations to 2 and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-6. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL.</u> <u>The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.</u> <u>Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water</u> 	<p>Please reflect this is the Navy's belief/perspective. It is not necessarily shared by the FFA Regulatory Parties.</p>

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.</u></p> <p><u>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or additional reevaluation of remedial alternatives/treatment that have been screened for further evaluation are necessary to determine whether the remedy is protective of the Bay.</u></p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p> <p>3.5.1.3 Parcel B-2</p> <p>Yes. <u>The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L.</u> Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, <u>data are lacking that demonstrate mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L.</u> The RAO is stated as follows:</p> <p>... [no change from existing text]</p> <p>Protectiveness is not affected based on the following rationale: <u>Data at the groundwater-surface water interface has not been collected, however, from the Navy's perspective, it is not expected that mercury exceeds 0.6</u></p>	<p>The wording of what the Navy needs to do because of uncertainty is worded differently from that stated earlier (above). The wording needs to be consistent.</p> <p>Please reflect it is the Navy's belief/perspective (not the FFA Regulatory Parties) that mercury exceedances are not expected.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>µg/L based on the following rationale:</u></p> <ul style="list-style-type: none"> Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009). Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996). Furthermore, mixing studies conducted by State of Washington, Department of 	

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023).</p> <ul style="list-style-type: none"> The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-6). Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in "sentinel" wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4). <p>Review of annual O&M inspections, historical documents... [no change from original text].</p>	
2	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel C, B- aquifer, Protectiveness Determination	<p>This comment addresses the B-aquifer characterization. EPA does not support the Navy's draft <i>Short-term Protective</i> determination but rather a <i>Protectiveness Deferred</i> determination because from EPA's perspective, for groundwater, information has come to light that calls into question the protectiveness of the remedy (Question C of the Report), and more information is needed to determine protectiveness and whether an unacceptable risk exists.</p> <p>In general, both the A-aquifer and B-aquifer (and bedrock) groundwater flows towards the San Francisco Bay. The Navy's cross-sections in the RU-C2 area confirm there are gaps or</p>	<p>Navy acknowledges that while, <u>from the Navy's perspective</u>, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to "Protectiveness Deferred" until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ investigation for RU- C4 and the B-Aquifer <u>and Upper F-WBZ investigation for RU-C2 investigation</u>.</p>	<p>Please clarify that this is the Navy's belief/perspective, not necessarily that of the FFA Regulatory Parties.</p> <p>The Navy states that it "...will complete the Deep F-WBZ investigation for RU- C4 and the B-Aquifer investigation." This statement needs to clearly identify two separate investigations: the Deep F-WBZ investigation in RU-C4 (which is the subject of the Water Board/EPA Informal Dispute, and which is currently in the "Draft Final Work Plan" stage) and</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p>holes in the aquitard that enable communication between the A- and B-aquifers, and the Navy's data confirm there is contamination in the underlying B-aquifer at RU-C2 downgradient of the gaps or holes, and in the deep Fractured Water Bearing Zone (deep F-WBZ) at RU- C4. Consequently, the A-aquifer cannot be isolated as protective.</p> <p>In response to FFA regulatory concerns, the Navy has agreed to, but has not initiated, a full and timely characterization of the B-aquifer in the RU-C2 area, including the upper F-WBZ below and in contact with the B-aquifer. The Navy has also agreed to monitor B-aquifer wells as part of performance monitoring of the groundwater treatment of the A-aquifer at RU-C2 (RAWP Phase III). With respect to the Deep F-WBZ at RU-C4, which was the subject of an informal dispute brought by the Regional Water Quality Control Board and EPA, the Navy has submitted a draft workplan to fully characterize the nature and extent of contamination and groundwater flow patterns to the San Francisco Bay. The workplan has not been finalized and work has not yet commenced.</p> <p>For the Final <i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the full and timely characterization of the B-aquifer in the RU-C2 groundwater area, and the Navy's anticipated timeframe for developing these documents. An anticipated timeframe for the performance monitoring of the groundwater treatment at RU-C2 in both the A- and B-aquifers should also be provided. At the April 25, 2024, meeting, the Navy expressed agreement in concept that these commitments have been made. If the Navy is unable to commit to develop and provide the requested primary</p>	<p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the planned investigations <u>currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area</u> to address these data needs as follows:</p> <p><u>Yes. The following information has come to light that could question the protectiveness of the remedy:</u></p> <ul style="list-style-type: none"> <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-Aquifer and Upper F-WBZ in RU-C2 are is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F- WBZ and unacceptable discharges to the Bay are not and will not occur.</u> <p>The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B- aquifer present potential unacceptable risks to Bay receptors. In</u></p>	<p>the B-aquifer and underlying Upper F-WBZ in the RU-C2 area (still in development).</p> <p>The first component of the RU-C2 investigation has been agreed to by the Navy. The Navy has committed to collecting and evaluating B-aquifer data as part of the performance monitoring of the A-aquifer remedial action (as documented in the Navy's Response dated 2/8/24 to EPA's Item Nos. 1 and 2 dated 3/14/23 & 11/22/23 in Appendix H of the Final Parcel C Phase III Remedial Action at RUs C2 and C5, dated March 2024).</p> <p>The protectiveness statement does not include the development of a conceptual site model (CSM) of the A- and B-aquifers and shallow F-WBZ at RU-C2 and the deep F-WBZ at RU-C4. The statement should be revised to include the development of CSMs for both RU-C2 and RU-C4.</p> <p>As EPA discussed at the April 25, 2024 meeting, regarding RU-C2, the collection of B-aquifer and shallow F-WBZ data, as appropriate, should commence with the performance monitoring period, which EPA expects will be within the next two years.</p> <p>EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing primary documents, such as workplans.</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		documents within a timeline acceptable to the FFA regulatory parties, EPA reserves its right to reassess our evaluation of B-aquifer and Deep F-WBZ groundwater at Parcel C.	order to make a protectiveness determination, the following action, <u>at a minimum, needs to be made: complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, as appropriate, to assess potential impacts to Bay receptors. For the Deep F-WBZ, a draft final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-Aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans. Depending on the results of data analyses, the development of conceptual site models, and necessary next steps, it is expected that these actions could possibly be completed within the next will take approximately 5 years, at which time, as appropriate, to complete, at which time a protectiveness determination will be made.</u>	
3	Five-Year Review Summary Form, Protectiveness Statements, page xxi, Parcel E-2, Protectiveness Determination	EPA agrees with the Navy's <i>Will Be Protective</i> determination, however, additional actions are requested in the Final <i>Fifth Five-Year Review Report</i> . For landfills of this nature, the presumptive remedy in both the CERCLA and RCRA programs is to "cap and contain the waste," and include appropriate environmental controls and monitoring for, at a minimum, stormwater, groundwater, and landfill gas. After a careful review and comparison of cleanup alternatives against EPA's nine evaluation criteria, the Parcel E-2 landfill ROD selected a remedy consistent with the presumptive remedy approach yet	The Navy acknowledges that EPA agrees with the <i>Will Be Protective determination, as long as the minimum information and analysis needs of the FFA Regulatory Parties, including the detailed status of all planned and installed wells, are provided on an agreed upon schedule with the caveats stated in this comment.</i> Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5) to document the Navy's commitment to	As stated in our comments and at the April 25, 2024 meeting, it is EPA's position that if the Navy is unable to agree to the timely analysis of existing Parcel E-2 groundwater data, EPA may need to consider the effect this may have on potential performance issues at Parcel E-2 and our current protectiveness determination. As discussed, most recently at the April 25, 2024, meeting, the Navy needs to amend the appropriate

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p>included several special design elements to account for the unique nature and location of this particular landfill. EPA agrees that Parcel E-2 is still undergoing remedy construction, including relatively minor work on the cover system, the completion of the landfill gas extraction and conveyance system, and the completion of the freshwater (FW) and tidal wetlands.</p> <p>Notwithstanding EPA's agreement that the remedy is still under construction, given that the Navy has deferred responding to Question A ("is the remedy functioning as intended by the decision documents?") in the Report, and given that certain fundamental landfill containment and control facilities, such as the nearshore slurry wall, the upland slurry wall, and the landfill cover system have been constructed, EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. For the Final</p>	<p>continue to construct the remedy as well as <u>evaluate analyze currently available performance data in a timely manner on a schedule agreed to among the FFA parties</u> for the remedy components that are in place. <u>As discussed at the April 24, 2024 meeting, the specific minimum information and analysis needs of the FFA Regulatory Parties, including a detailed status of all wells, are forthcoming in a tri-agency letter, after which the FFA parties will meet to discuss specific tasks and schedules. As discussed informally and in EPA's comments, the Navy recognizes that EPA expects the Navy will immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay:</u></p> <p><u>6.6.1.5 Parcel E-2 Other Findings</u></p> <p><u>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (e.g., Nearshore Slurry Wall and landfill cover). The following is a summary of the remaining RA work and interim studies planned prior to completing the RACR:</u></p> <ul style="list-style-type: none"> <u>Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018):</u> 	<p>primary document(s) to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. This is overdue and must be done as soon as practicable. We suggest the primary document(s) be identified and a draft schedule is developed for discussion with the FFA Regulatory Parties as soon as possible and not later than September 30, 2024. The Navy's informal exchange of one point of compliance with another, without amending the necessary primary document(s), is not acceptable.</p> <p>Our concerns stand and must be appropriately addressed:</p> <p>EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p><i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the evaluation work, and the Navy's anticipated timeframe for developing those documents. At the April 25, 2024, meeting, the Navy expressed agreement in concept but awaits further information from the FFA regulatory parties, which is forthcoming in a tri-Agency letter.</p> <p>If the Navy is unable to provide the required list and schedule in the Final <i>Fifth Five-Year Review Report</i>, EPA may need to consider the effect that the lack of sufficient groundwater data and documentation may have on potential performance issues at Parcel E-2.</p> <p>In addition, EPA has conveyed, most recently at the April 25, 2024, meeting, that the Navy needs to amend the appropriate primary document to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. At the April 25 meeting, the Navy agreed in principle and will propose the primary document that must be amended and an anticipated timeframe for modifying that primary document.</p>	<ul style="list-style-type: none"> Landfill Gas System (Phase IVa) anticipated in <u>4/2025</u> Wetlands (Phase IVb) anticipated in <u>10/2027</u> Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as <u>at the new compliance point by preparing an addendum to revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than September 30, 2024. e the compliance monitoring and mitigation plan for methane at the landfill.</u> Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated in <u>12/2024</u> Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 6/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction RA Performance Report is anticipated in 3/2025. <p>Water Board specific concerns (See Water Board Protectiveness Determinations General Comment #3) and responses were added to the technical assessment for Parcel E-2 (Section 6.5.1, page 6-19) as follows:</p> <p><u>While the remedy is currently under construction, Agency concerns have been raised regarding the completed</u></p>	<p>evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.</p> <p>Except as noted, below, EPA is not providing comment or response on the Navy's inclusion, under "Navy Response (May 2024)" pertaining to EPA's comments of 4/30/2024, of "Water Board specific concerns." Irrespective, EPA's responses of 6/4/2024 presented herein stand.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>components:</u></p> <ul style="list-style-type: none"> Concern: The Upland Slurry Wall was not installed as designed. <u>Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a "hanging wall" (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was determined to be bedrock which has a lower permeability than the surrounding aquifer material. A work plan is under Agency review to evaluate the Upland Slurry Wall performance and work is anticipated to begin in 2025.</u> Concern: The turbidity curtain was not used during remedy construction. <u>A 2,000-foot US Department of Transportation Type III offshore turbidity curtain was installed during shoreline work in accordance with the Design (ERRG, 2014) on November 30, 2016 as documented in the Phase II Remedial Action Construction Summary Report (Aptim, 2021). The turbidity curtain was removed after shoreline activities were completed, in accordance with the RAWP Appendix D, Environmental Protection Plan (CB&I, 2016) which states "During shoreline earthwork (revetment installation, wetlands excavation, and site grading), a turbidity curtain will be deployed as the BMP for sediment control."</u> 	

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<ul style="list-style-type: none"> Concern: The Navy has not provided all stormwater best practices documentation. The Navy has provided the following final primary documents that contain stormwater best practices: Remedial Action Work Plans (RAWPs) (CB&I, 2016; KEMRON, 2018), Stormwater Protection Plan (ref), stormwater best practices monitoring documentation during construction is provided in the Phase I RACR (Gilbane, 2018) and Phase II RACSR (Aptim, 2021) and will also be provided in the forthcoming Phase III RACSR (Pending). The Navy has also responded to the Water Board's December 3, 2022 and January 11, 2023 follow-up e-mail request for stormwater records. Concern: There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future. Lead was removed from the tidal wetland areas in accordance with the Phase II RAWP (KEMRON, 2018) and subsequent Fieldwork Variance #5 (Appendix G of Aptim, 2021). Exceedances shown on Figures 6 and 7 of the RACSR (Aptim, 2021) were initial samples prior to over-excavation to remove lead- impacted soils, post-over-excavation samples were below the RG. Additionally, the landfill cap geomembrane and geosynthetic clay liner (GCL) layers prevent vertical infiltration of rainfall from reaching the underlying the landfill waste and promoting leachate. The Geocomposite drainage layer carries any flow that infiltrates through the vegetative layer to the perimeter ditches. The surface water from the eastern half of the 	

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>site will be collected by the eastern perimeter ditch and will drain directly into the Bay through the culvert pipe at the southeast corner of the site. The surface water from the western half of the site will be collected by the western perimeter ditch and will flow into the Freshwater Wetlands with excess runoff draining through the Freshwater Wetlands Outfall pipe into the Bay.</p> <p>The chemically contaminated soils near the Freshwater Wetlands were removed during previous hot spot excavations and excavations during Phase II subgrade preparations, with confirmation testing to show that they are below action limits in the FINAL RASCR (Figure 6 attached) for copper, lead, total PCBs, and total TPHs.</p> <p>There is no required tie into the underlying Bay Mud at the Wetlands Boundary. See Detail 4 on Design Drawing C18 from the DBR (attached) for the cover termination at the Wetlands boundaries.</p> <ul style="list-style-type: none"> Concern: There may be impacts to soil due to RCRA hazardous waste handling in stockpiles during remedy installation: Navy is planning, at agencies' request, to sample the soil under former Parcel E-2 stockpile locations now covered with radiological retesting radiological screening yard (RSY) pads for metals to confirm that the stockpiles didn't impact the soils around them during storm events. This will be completed after the RSY pads are removed. <p>The Navy understands that there is a pending data request and notes the following:</p>	<p>Regarding what the Navy notes, as stated at the April 25, 2024 meeting, the FFA Regulatory Parties expect</p>

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<ul style="list-style-type: none"> Groundwater elevations are available in the BGMP reports for all installed wells at Parcel E-2 COC data for A- and B-aquifers are available in the BGMP for all installed wells at Parcel E-2 Leachate testing is unavailable as the leachate ports have not yet been installed Extraction well data, french drain sample port data, freshwater wetland piezometer and wetland outfall data is not available because these components have not yet been installed Detailed plume and flow direction cannot be determined as the full monitoring well network has not been installed; However, groundwater modeling conducted during design planning supports the theoretical performance of the remedy. This is included in Appendix F of the RD (ERRG, 2014) <p>The Final RAWP (KEMRON, 2018) covers all the remaining remedy installation elements in the RD/ROD. The Final RAMP for Parcel E-2 (ERRG, 2014b) will be used to monitor the remedy once its installation is completed.</p> <p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15.</p> <p>ERRG, 2014b. Final Remedial Action Monitoring Plan, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. August 15.</p>	<p>that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>CB&I Federal Services, LLC. (CB&I). 2016. Work Plan Shoreline Revetment; Site Grading and Consolidation of Excavated Soil, Sediment, and Debris; and Upland Slurry Wall Installation Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. October 12.</p> <p>KEMRON Environmental Services (KEMRON). 2018. Remedial Action Work Plan, Final Cove, Wetlands, and Landfill Gas Control and Containment System, Remedial Action Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. December 26.</p> <p>Gilbane. 2018. Remedial Action Completion Report, Hot Spot Delineation and Excavation and Nearshore Slurry Wall Installation, Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. June.</p> <p>APTIM. 2021. Remedial Action Construction Summary Report, Parcel E-2 (Phase II), Hunters Point Naval Shipyard, CA. April 6</p>	

RTC Table 2 - Other Comments				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
11	Section 3.7.3	Navy's Parcel B-2 Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 1 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.
12	Section 4.7.1	Navy's Parcel C, Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 2 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 2 - Other Comments				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
13	Section 6.7.1.2	Navy's Parcel E-2, Draft Protectiveness Determination – <i>Will Be Protective</i> EPA's Response – <i>Will Be Protective</i> , but additional actions are requested, as discussed above.	Comment acknowledged, see response to EPA Comment 3 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930	Responses By Navy		
Comment By Mary Snow, P.G.	Code/Organization Groundwater Protection Division, San Francisco Regional Water Board			Date April 2024	
Project Title and Location Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023				Type of Review	
				X	Draft
					Final
					Other

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
1	General	<p>Comment 1a: We do not agree with the protectiveness statement provided in the Draft Five-Year Review for Parcel B-2, Installation Restoration (IR) Site 26. The Regional Water Board’s preliminary protectiveness determination for Parcel B-2, IR Site 26 is “Not Protective.” This determination is consistent with USEPA guidance (2012) because for mercury concentrations in groundwater the “[M]igration of contaminants is uncontrolled and poses an unacceptable risk to human health and the environment; or potential or actual exposure is clearly present or there is evidence of exposure.”</p> <p>Comment 1b: The remedy at Parcel B-2, IR Site 26 is not protective because elevated mercury concentrations in groundwater may be discharging to San Francisco Bay (Bay). Therefore, development of a new primary document work plan focused on alternative treatments and treatment methodologies is warranted as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing this work plan with appropriate implementation timelines that are agreeable to the Federal Facility Agreement (FFA) signatories.</p> <p>The Draft Five-Year Review does not adequately reflect the Regulatory Agencies’ (i.e., USEPA, Department of Toxic Substances Control (DTSC), and Regional Water Board) comments and concerns regarding</p>	<p>From the Navy’s perspective, there are multiple lines of evidence presented in the Five-Year Review suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in the April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to “Protectiveness Deferred” determination. The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions needs to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A primary document presenting the path forward will be finalized as soon as practicable but no later than July 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</u></p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows:</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>the status of the remedy for Parcel B-2, IR Site 26. The remedy at Parcel B-2 includes soil excavation, installation of a durable cover, in situ stabilization of mercury in groundwater, monitoring, and institutional controls.</p> <p>The Navy's "Short-Term Protective" determination for Parcel B-2 IR Site 26 groundwater is not supported due to elevated concentrations of mercury in groundwater, as identified in the following Regulatory Agencies' correspondence: Tri-Agency Letter dated August 20, 2021, Tri-Agency Letter dated November 23, 2021, DTSC Note to File - Non-Concurrence dated December 23, 2021, and Regional Water Board Letter dated March 14, 2022.</p> <p>Specifically, after a three-year performance and post-treatment monitoring period, the remedial action, in situ stabilization using the reagent Metafix, has failed to reduce mercury concentrations in groundwater to below 0.6 micrograms per liter (µg/L), the Parcel B Remedial Design (RD) trigger level. Elevated concentrations of mercury in groundwater are in "sentinel" wells, representing a discharge to the Bay. Additionally, the Regional Water Board's concerns regarding the validity of the development of the trigger concentration for mercury have not been addressed by the Navy.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response 1a: We do not agree that the 2008 TCRA is a line of evidence supporting Navy's conclusion that mercury concentrations in groundwater are unlikely to exceed 0.6 µg/L in Bay water. The TCRA did not remove mercury contamination within bedrock. Five samples collected from the top of the underlying bedrock contained mercury concentrations that exceeded the soil remediation goal (RG) of 2.3 mg/kg, ranging from 5.9 to 15 mg/kg (Figure 4). All five samples with elevated mercury were located immediately adjacent to the Bay and up-gradient "sentinel" wells IR26MW49A and IR26MW71A. Incomplete removal of mercury from bedrock sustains the unacceptable mercury discharges to the Bay.</p>	<p>After completion of the 3-year post-ISS treatment performance monitoring, the FFA regulatory agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that "mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan." (EPA, DTSC, and Regional Water Board, 2021).</p> <p>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</p> <p>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</p> <ul style="list-style-type: none"> • Completion of source removal in 2008 via a time-critical removal action (Insight, 2009) • Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 performance monitoring locations to 2 performance monitoring locations and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-7. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL.

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>Regional Water Board Response 1b: Given that groundwater treatment was implemented 7.5 years ago and has failed to achieve the TL of 0.6 µg/L mercury in sentinel wells IR26MW49A and IR26MW71A, the only wells down-gradient of the source area, we do not agree that the remedy has been partially successful. Rather, it has failed.</p> <p>Whereas our trend analysis indicates that mercury concentrations are likely decreasing in well IR26MW49A, it is nonetheless an order of magnitude greater than the TL; consequently, the cleanup timeframe at best will be many decades unless alternative remedial actions are completed. Mercury concentrations in well IR26MW71A are consistently greater than the RAO and stable, meaning that the cleanup timeframe for that plume area is unknown, and requires further evaluation.</p> <p>Regional Water Board Response 1c: We do not agree that the Navy's assessment that the extent of mercury-contaminated groundwater is limited (and shrinking), because the extent of mercury contamination has not been characterized in the following directions:</p> <ul style="list-style-type: none"> • vertically in bedrock; • east and south of Source Area 2 where five confirmation samples contained mercury concentrations above the soil RG; and • in the San Francisco Bay. <p>Until the data gaps are addressed with additional investigation, the conclusions presented in the Five-Year review are not supported regarding the extent of the mercury plume.</p> <p>Regional Water Board Response 1d: We disagree with the Navy's statement that "the groundwater is not representative of Bay water." The industry standard to evaluate freshwater-seawater mixing uses conductivity measurements. Based on our review of the 2022 conductivity measurements for nearshore wells IR26MW49A, IR26MW70A, and IR26MW71A, samples collected from these wells were 100 percent mixed (i.e., the water samples were essentially Bay</p>	<ul style="list-style-type: none"> • <u>The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.</u> • <u>Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.</u> <p><u>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation are necessary to determine whether the remedy is protective of the Bay.</u></p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p> <p>3.5.1.3 Parcel B-2</p> <p><u>Yes. The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L. Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, data demonstrating that mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L are lacking. The RAO is stated as follows:</u></p> <p>... [no change from existing text]</p> <p><u>Protectiveness is not affected based on the following rationale: Data at the groundwater-surface water interface has not been collected; however, from the Navy's perspective, it is not expected that mercury exceeds 0.6 µg/L based on the following rationale:</u></p> <ul style="list-style-type: none"> • <u>Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009).</u>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>water). Therefore, sample laboratory analytical data for these wells are more representative of ambient mercury concentrations in Bay surface water. Additionally, based on our comparison of the 2022 sampling times to the National Oceanic and Atmospheric Administration's tide predictions, sampling of the nearshore monitoring wells was not conducted with consideration of predicted tide levels and, consequently, samples were not collected at low tides when groundwater discharges to the Bay. Because samples collected from nearshore wells were likely mixed/diluted, no dilution factor should be applied to nearshore groundwater data.</p> <p>Applying a standard Site Conceptual Model for groundwater discharge to surface water, mercury-contaminated groundwater migrates through and beneath the shoreline revetment during low tides and upwells into the Bay's transition zone¹. We are concerned that benthic organisms are exposed to harmful mercury concentrations.</p> <p>Further, we are concerned that sample analytical results do not represent the mercury concentrations that the Bay's aquatic life is exposed to because samples are filtered in the field, removing mercury adsorbed on colloids in groundwater. When/where mercury discharges to the Bay with minimal dilution, including mercury in adsorbed phases, mercury concentrations may be greater than the reported concentrations in sentinel wells IR26MW49A and IR26MW71A. Consequently, we recommend that future water samples collected from all nearshore wells be analyzed for both dissolved and total mercury (no field filtration prior to analysis).</p> <p>The Navy concluded that a "protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater." We disagree and as stated in our original comment, our protectiveness determination for Parcel B-2, IR Site 26 is "Not Protective."</p> <p>Regional Water Board Response 1e: We disagree that a protectiveness determination cannot be made at this time. Elevated concentrations of mercury in groundwater exist in the sentinel wells,</p>	<ul style="list-style-type: none"> Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996). Furthermore, mixing studies conducted by State of Washington, Department of Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023). The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-7). Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in sentinel wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4).

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>i.e., the points of compliance, representing unacceptable discharges to the Bay and evidence of exposure to the Bay's aquatic life. Consistent with USEPA guidance (2012), "Not Protective" is the appropriate protectiveness determination.</p> <p>TL for Mercury in Groundwater. In response to the Regional Water Board's concerns regarding the validity of the mercury TL in groundwater, a link to the source document was provided. However, the link was not accessible and could not be evaluated. Therefore, we continue to maintain that the HGAL for mercury of 0.6 µg/L, which is the basis of the mercury TL and Remedial Action Objective, is not appropriately representative because:</p> <p>a. Influences from HPNS industrial activities are reflected in the data used.</p> <p>b. The HGAL is not specific to IR Site 26. Only 8 of 162 samples were collected from Parcel B-2, and it is likely that no sample was collected from IR Site 26.</p> <p>c. Mercury analytical results used to estimate the mercury HGAL were obtained over a period of about one year, which could not reflect the seasonal and medium- to long-term variability of mercury in groundwater.</p> <p>d. The data used to calculate the mercury HGAL were entirely comprised of non-detect concentrations or their derivatives.</p>	<p>Review of annual O&M inspections, historical documents... [no change from original text].</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 3-9 (Parcel B Issues, Recommendations, and Follow-up Actions):</p> <p><u>Issue: There is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater</u></p> <p><u>Recommendation: Evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or remedial alternatives/treatment that have been screened for further evaluation. Prepare a primary document presenting the path forward.</u></p> <p><u>Milestone Date: 10/31/2025</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p> <p>Response to Additional Comment:</p> <p>The Navy appreciates the detailed evaluation that was provided. The Navy acknowledges that an agreement cannot be reached regarding the Protectiveness Deferred determination for Parcel B-2 prior to the Five-Year Review signature date therefore, the protectiveness determination is Deferred. The Navy will work with the Water Board, DTSC, and USEPA to develop the approach for data collection, remedy optimization, and/or remedial alternatives/treatment that have been screened for further evaluation to determine protectiveness and ensure future protectiveness of the remedy at Parcel B-2.</p> <p>Note that additional revisions in the response above were made in blue font based on EPA's additional response (See EPA Comment #1). The date of July 31, 2025 was identified for the milestone date during the April 2024 meeting. It was determined after this meeting that since this is an FY25 project award, it would be affected by the financial brownout. NAVFAC's financial system is being changed which not allow the award of FY25 projects to start until after December 31, 2024. Due to this uncontrollable issue, the Navy will require a</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			date change to October 31, 2025. This date change is shorter than the duration of the brownout.
2	General	<p>Comment 2a: We do not agree with the Navy's protectiveness determination for Parcel C. The Regional Water Board's preliminary protectiveness determination for Parcel C is "Protectiveness Deferred." This determination is consistent with USEPA guidance (2012) because it is unknown if the response should be "yes" to "Question B - Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of the remedy selection still valid?"</p> <p>Comment 2b: A protectiveness determination of the remedy at Parcel C cannot be made at this time until further information is obtained. Further information will be obtained upon successful implementation of the Deep Fractured Water Bearing Zone (F-WBZ) Investigation for Remedial Unit-C4 (RU-C4) and the planned B-aquifer investigation, at which time a protectiveness determination can likely be made. Our expectation is that the Draft-Final Five-Year Review will specify these documents as "follow-up actions" and commit to implementation timelines that are agreeable to the FFA signatories.</p> <p>The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' comments and concerns regarding the status of the remedy for Parcel C. The remedy at Parcel C includes soil excavation, installation of a durable cover, soil vapor extraction, in situ treatment of groundwater, monitoring, and institutional controls. The Navy's "Short-Term Protective" determination for Parcel C is not supported for groundwater due to data gaps in the understanding of the communication/connections between the hydrologic units within Parcel C, as documented in the following Regulatory Agencies' correspondence: Joint-Agency Letter (USEPA) dated July 30, 2021, Joint-Agency Letter (USEPA) dated September 17, 2021, and Tri-Agency Letter dated May 24, 2022.</p>	<p>Navy acknowledges that while, from the Navy's perspective, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to "Protectiveness Deferred" until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ investigation for RU-C4 and the B-Aquifer and Upper F-WBZ investigation for RU-C2.</p> <p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the investigations currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area to address these data needs as follows:</p> <p><u>Yes. The following information has come to light that could question the protectiveness of the remedy:</u></p> <ul style="list-style-type: none"> <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-aquifer and Upper F-WBZ in RU-C2 are required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u> <p>The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B-aquifer present potential unacceptable risks to Bay receptors. In order to make a protectiveness determination, the following action, at a minimum, needs to be made:</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>Specifically, the connection and communication between hydrogeologic units within Parcel C is not fully understood; therefore, further characterization is required to demonstrate that 1) remedies within the A-aquifer will be effective and not recontaminated by chemicals of concern (COCs) within the B-aquifer and/or Deep FWBZ and 2) unacceptable discharges to the Bay are not and will not occur.</p> <p>Additional Comment Received 6/4/2024</p> <p>Although the response discusses the two documents that will fill the data gaps, i.e., Deep F-WBZ investigation for RU-C4 and the B-Aquifer investigation, the response lacks specificity regarding detailed timeframes and schedules for completion. The text should be revised to include timeframe/schedule details.</p>	<p>complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, <u>as appropriate</u>, to assess potential impacts to Bay receptors. For the <u>Deep F-WBZ</u>, a draft-final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans. Depending on the results of the data analyses, the development of conceptual site models, and necessary steps, these actions could possibly be completed within the next 5 years, at which time, as appropriate, a protectiveness determination will be made.</p> <p>Response to Additional Comment:</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 4-8 (Parcel C Issues, Recommendations, and Follow-up Actions):</p> <p><u>Issue: There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u></p> <p><u>Recommendation: Complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria to assess potential impacts to Bay receptors. Where warranted, additional actions or changes to the remedy will be recommended at the conclusion of these investigations.</u></p> <p><u>Milestone Date: 7/31/2029</u></p> <p><u>Interim Milestones: Completion of F-WBZ investigation fieldwork 11/30/2025, completion of the F-WBZ investigation report 11/30/2026¹</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p><u>Footnote:</u></p> <p>¹ The Parcel C B-aquifer study will also be conducted within the overall timeframe to meet the milestone date; however, because funding and contracts are not currently in place, the interim milestones are unavailable.</p> <p>Note that additional revisions in the response above were made in blue font based on EPA's additional response (See EPA Comment #2).</p>
3	General	<p>Comment 3a: We do not agree with the Navy's protectiveness determination for Parcel E-2. The Regional Water Board's preliminary protectiveness determination for Parcel E-2 is "Protectiveness Deferred" because the remedy components were not implemented (turbidity curtain) or constructed as designed (Upland Slurry Wall).</p> <p>There are data gaps regarding lead contamination within the wetland, concerns regarding stormwater management practices during construction, questions regarding management of hazardous waste piles, and ongoing concerns regarding the management and monitoring of methane in soil gas at Parcel E-2.</p> <p>Comment 3b: A protectiveness determination of the remedy at Parcel E-2 cannot be made at this time until further information is obtained. Further information and data should include:</p> <ul style="list-style-type: none"> Obtaining as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California. Monitoring water levels and collecting analytical data to demonstrate the Upland Slurry Wall is functioning as designed. Collection of soil samples in the vicinity of Resource Conservation and Recovery Act (RCRA) hazardous waste piles. Collection of soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated. Provide a revised compliance monitoring and mitigation plan for methane at the landfill. 	<p>Because the Remedy at Parcel E-2 is currently under construction the Navy's protectiveness determination is "Will be Protective". The construction has prioritized components to address potential migration to the Bay first with the following components completed:</p> <ul style="list-style-type: none"> Hot spot removal, Nearshore slurry wall, Shoreline revetment Soil excavation to create freshwater and tidal wetlands Radiological characterization, installation of foundation soil layer in preparation of Phase III landfill cover installation Final cover installation <p>Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5 and in the Five-Year Review Summary Table under Other Findings) to document the Navy's commitment to continue to construct the remedy as well as analyze currently available data in a timely manner on a schedule agreed to among the FFA parties for the remedy components that are in place. As discussed at the April 24, 2024 meeting, the specific minimum information and analysis needs of the FFA Regulatory Parties, including a detailed status of all wells, are forthcoming in a tri-agency letter, after which the FFA parties will meet to discuss specific tasks and schedules. As discussed informally and in EPA's comments, the Navy recognizes that EPA expects the Navy will immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay:</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<ul style="list-style-type: none"> Provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2. <p>These actions should be prioritized by the FFA Remedial Project Managers and/or based on imminent exposure threats. Our expectation is that the Draft-Final Five-Year Review will include a commitment to developing the appropriate primary documents to address these concerns and include implementation timelines that are agreeable to the FFA signatories.</p> <p>The Draft Five-Year Review does not adequately reflect the Regulatory Agencies' comments and concerns regarding the status of the remedy for Parcel E-2. The remedy at Parcel E-2 includes soil excavation, installation of a durable cover, installation of belowground barriers, landfill gas monitoring, collection, and treatment, long-term monitoring of groundwater, radiological screening and remediation, and institutional controls.</p> <p>The Navy's "Will be Protective" determination for Parcel E-2 is not supported due to concern regarding remedy implementation and site characterization, as documented in the following Regulatory Agencies' correspondence: Regional Water Board Letter dated March 6, 2023, Regional Water Board Letter dated August 7, 2020, Regional Water Board Letter dated December 15, 2020, Joint-Agency Letter dated March 16, 2021, Joint-Agency Letter dated April 28, 2021, Tri-Agency Letter dated May 5, 2022, Regional Water Board Letter dated August 17, 2022, Tri-Agency Letter dated December 8, 2022, Regional Water Board Letter dated December 13, 2022, and Joint-Agency Letter (USEPA) dated July 18, 2023.</p> <p>Although it is understood that the remedy has not been fully implemented, the Navy has not addressed Regulatory Agencies' concerns regarding: lack of deployment of turbidity curtain during construction, stormwater best management practices/records keeping, Upland Slurry Wall not implemented as designed, request for as-built designs for changes to the Upland Slurry Wall, methane</p>	<p><u>6.6.1.5 Parcel E-2 Other Findings</u></p> <p>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (for example, Nearshore Slurry Wall and landfill cover). The following is a summary of the remaining RA work, interim studies, and key milestones planned prior to completing the RACR:</p> <ul style="list-style-type: none"> Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018): <ul style="list-style-type: none"> Landfill Gas System (Phase IVa) anticipated in 11/30/2025 Wetlands (Phase IVb) anticipated in 11/30/2027 Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as a new compliance point by revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024. Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated by 11/30/2024. Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 8/31/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction Remedial Action Performance Report is anticipated by 12/31/2024. <p>Water Board specific concerns and responses were added to the technical assessment for Parcel E-2 (Section 6.5.1, page 6-20 and 6-21) as follows: While the remedy is currently under construction, Agency concerns have been raised regarding the completed components:</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.</p> <p>Additional Comments Received 6/4/2024</p> <p>Regional Water Board Response 3a: We disagree with the rationale for the Navy's protectiveness determination based on the completion of several remedy components that can be monitored for effectiveness/protectiveness. As described in the original Comment 3a, we have outlined the necessary data and information that can be collected to address longstanding agency concerns about the completed remedies.</p> <p>We acknowledge that the Navy has agreed to address the following issues: collection of soil samples near Resource Conservation and Recovery Act (RCRA) hazardous waste piles and provide an addendum to the compliance monitoring and mitigation plan for methane at the landfill. However, several outstanding concerns have not been addressed by the RTCs as described in our Responses 3b to 3e below.</p> <p>Regional Water Board Response 3b: Based on our understanding of the scope of work for the work plan to evaluate USW performance, the water level and analytical data to demonstrate USW is functioning as designed have not been included as requested by regulatory agencies. We have reiterated the importance of the data for evaluation of potential discharges using existing monitoring wells and have not received an adequate rationale for omitting this from forthcoming field investigations. Therefore, we cannot concur that the remedy "Will be Protective" because the necessary data to show remedy effectiveness/protectiveness is not being collected.</p> <p>Regional Water Board Response 3c: The Navy references the turbidity curtain installed as part of the Phase II remedial action. However, as described in Specific Comment 19, our concerns are related to the 2018 Remedial Action Work Plan (RAWP), which covers activities of the Phase III remedial action and also required installation of a turbidity curtain. The RTC does not adequately address our comment</p>	<ul style="list-style-type: none"> • Concern: The Upland Slurry Wall was not installed as designed. <u>Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a "hanging wall" (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was determined to be bedrock which has a lower permeability than the surrounding aquifer material. The draft final work plan to evaluate the Upland Slurry Wall performance is currently under way and work is anticipated to begin in 2025.</u> • Concern: The turbidity curtain was not used during remedy construction. <u>A 2,000-foot US Department of Transportation Type III offshore turbidity curtain was installed during shoreline work in accordance with the Design (ERRG, 2014) on November 30, 2016 as documented in the Phase II Remedial Action Construction Summary Report (Aptim, 2021). The turbidity curtain was removed after shoreline activities were completed, in accordance with the RAWP Appendix D, Environmental Protection Plan (CB&I, 2016) which states "During shoreline earthwork (revetment installation, wetlands excavation, and site grading), a turbidity curtain will be deployed as the BMP for sediment control." <u>Upcoming nearshore work, such as wetland installation, will be conducted in accordance with the design and RAWP.</u></u> • Concern: The Navy has not provided all stormwater best practices documentation. <u>Navy provided the following final primary documents that contain stormwater best practices: Remedial Action Work Plans (RAWPs) (CB&I, 2016; KEMRON, 2018); Stormwater Protection Plan; and stormwater best practices monitoring documentation during construction (provided in the Phase I RACR [Gilbane, 2018a] and Phase II RACSR [APTIM, 2021], which will also be provided in the forthcoming Phase III RACSR [pending]). The Navy also responded to the Water Board's December 3, 2022, January 11, 2023, and May 23, 2023 follow-up e-mail requests for stormwater records.</u>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>and we find that a “Protectiveness Deferred” designation is more appropriate until the Navy can assure regulatory agencies that future work will comply with the site-specific Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Stormwater Plans.</p> <p>Regional Water Board Response 3d: The RTC references Water Board correspondences from December 2022 and January 2023. As discussed in the May 2025 meetings, this does not represent the most recent correspondence and discussions regarding these concerns. On May 11, 2023, the Navy and regulatory agencies met to discuss unresolved issues with the records provided. Our concerns about significant lapses in the submitted best management practices (BMP) Inspection Reports were not addressed and the Navy contractor indicated they would submit additional documentation. We followed up with a May 23, 2023, email requesting the additional records and received no acknowledgement or response from the Navy nor its contractors. “Protectiveness Deferred” is consistent with our assessment that the previous five-year period showed inadequate documentation of stormwater BMPs and the CERCLA Stormwater Plans compliance.</p> <p>Regional Water Board Response 3e: We maintain that lead-contaminated soil was not adequately characterized or removed during the over-excavations documented in Fieldwork Variance #5 (Appendix G of Phase 2 Remedial Action Construction Summary Report, RACSR). See Attachment 2 from the August 7, 2020, Water Board letter for unresolved concerns about the lead RG exceedances that appear to have been left-in-place. As described in follow on correspondences listed in General Comment 3, the collection of soil/groundwater samples is needed to evaluate whether remediation was adequately completed, and we cannot concur with the “Will be Protective” determination until there is commitment from the Navy to provide this data.</p>	<ul style="list-style-type: none"> • <u>Concern: There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future.</u> Lead was removed from the tidal wetland areas according to the Phase II RAWP (KEMRON, 2018) and subsequent Fieldwork Variance #5 (Appendix G of APTIM, 2021). Exceedances shown on Figures 6 and 7 of the RACSR (APTIM, 2021) were initial samples prior to over-excavation to remove lead-impacted soils. Post-over-excavation samples were found to be below the RG. Additionally, the landfill cap geomembrane and geosynthetic clay liner layers prevent vertical infiltration of rainfall from reaching the underlying landfill waste and promoting leachate. The geocomposite drainage layer carries any flow that infiltrates through the vegetative layer to the perimeter ditches. The surface water from the eastern half of the site will be collected by the eastern perimeter ditch and will drain directly into the Bay through the culvert pipe at the southeast corner of the site. The surface water from the western half of the site will be collected by the western perimeter ditch and will flow into the freshwater wetlands with excess runoff draining through the freshwater wetlands outfall pipe into the Bay. The chemically contaminated soils near the freshwater wetlands were removed during previous hot spot excavations and excavations during Phase II subgrade preparations, with confirmation testing to show that they are below action limits in the Final RACSR for copper, lead, total PCBs, and total TPHs. There is no required tie into the underlying Bay Mud at the Wetlands Boundary. Refer to Detail 4 on Design Drawing C18 from the DBR for the cover termination at the wetlands boundaries. • <u>Concern: There may be impacts to soil due to RCRA hazardous waste handling in stockpiles during remedy installation:</u> Navy is planning, at agencies' request, to sample the soil under former Parcel E-2 stockpile locations now covered with radiological retesting radiological screening yard pads for metals to confirm that the stockpiles didn't impact the soils around them during storm events. This will be completed after the pads are removed.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15.</p> <p>CB&I Federal Services, LLC. (CB&I). 2016. Work Plan Shoreline Revetment; Site Grading and Consolidation of Excavated Soil, Sediment, and Debris; and Upland Slurry Wall Installation Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. October 12.</p> <p>KEMRON Environmental Services (KEMRON). 2018. Remedial Action Work Plan, Final Cove, Wetlands, and Landfill Gas Control and Containment System, Remedial Action Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. December 26.</p> <p>Gilbane. 2018. Remedial Action Completion Report, Hot Spot Delineation and Excavation and Nearshore Slurry Wall Installation, Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. June.</p> <p>APTIM. 2021. Remedial Action Construction Summary Report, Parcel E-2 (Phase II), Hunters Point Naval Shipyard, CA. April 6</p> <p>Response to Additional Comment:</p> <p>Response to 3a: The Navy acknowledges that an agreement cannot be reached regarding the Will Be Protective determination for Parcel E-2 prior to the Five-Year Review signature date; the Navy feels that a Will Be Protective determination is the appropriate protectiveness determination for Parcel E-2.</p> <p>Response to 3b: The water level and analytical data requested during agency review is now included in the scope of work for the USW performance work plan.</p> <p>Response to 3c: Text has been added that the upcoming nearshore work will be conducted in accordance with the design and RAWP.</p> <p>Response to 3d: The Navy has provided the requested documentation since receiving the follow up comments. The reference to the May 23, 2023 letter was added above.</p> <p>Response to 3e: The Navy maintains that the lead removal action was conducted in accordance with the RAWP as described in the response above.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			Note that revisions in the response above were made in blue font based on these and EPA's Additional Response received 6/5/2024 (See EPA Comment #3).
4	General	<p>Comment 4: The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the presence of PFAS, a class of chemical compounds that are considered emerging contaminants. The Navy must provide sufficient additional details to demonstrate that the protectiveness determinations are appropriate for each parcel. Otherwise, the determination should be "Protectiveness Deferred" with respect to PFAS.</p> <p>It is understood that PFAS investigations are ongoing. However, the findings in the Site Inspection for Basewide Investigation of Per- and Polyfluoroalkyl Substances (Liberty 2023) determined that a remedial investigation is necessary for all parcels for both soil and groundwater, therefore the extent of PFAS contamination is currently unknown. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and Parcel UC-3.</p> <p>The Navy must provide additional justification for their responses to protectiveness Questions A, B, and C (USEPA 2001 and 2012) with data and information that can demonstrate that remedies that were not specifically designed to prevent exposures to PFAS contamination are protective of human health and the environment.</p> <p>Additional supporting information could include but is not limited to exposure assumptions for PFAS, a discussion of remedy design features that can/will prevent exposures to PFAS, and figures showing the distribution of PFAS concentrations in context of remedy boundaries.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response 4a: The lines of evidence provided supporting no imminent CERCLA-related risk are insufficient.</p>	<p>The incorporation and evaluation of PFAS in the HPNS FYR was conducted in accordance with Navy policy and guidance. The Navy Policy for Conducting Five Year Reviews (dated June 2011), under Section 5.5 Five Year Review Technical Assessment, Item (d)ii, states,</p> <p><i>"Emerging contaminants which have not been previously investigated will only be assessed if (1) the contaminant is known or suspected due to site history, (2) peer reviewed toxicity criteria that can be used for risk assessment have been published, and (3) the contaminant may call into question the protectiveness of either the remedy or the RAOs."</i></p> <p>Current Navy Guidance states that an emerging contaminant (EC) should only affect a protectiveness determination if the EC is present at a concentration posing a potential unacceptable risk at the site AND the existing remedy does not address the current or future exposure to the emerging contaminant.</p> <p>As the PFAS remedial investigation (RI) has not been initiated to confirm whether there is unacceptable CERCLA risk to human and/or ecological receptors from PFAS at HPNS, it is not appropriate yet to evaluate if the existing remedy remains protective. Once the RI human health and ecological risk assessment is completed, the Navy will evaluate any identified PFAS CERCLA risk in the context of the existing site remedies.</p> <p>For a Protectiveness Deferred determination, Navy guidance is that the teams should determine if there is sufficient information to conclude that all human and ecological risks are currently under control and no unacceptable exposures are occurring. The Draft Five-Year Review presents lines of evidence supporting that any potential exposure pathways to PFAS contaminants likely do not pose an imminent risk based on the current remedies in place including ICs for soil and groundwater that are in place throughout all parcels. These lines of evidence are summarized below:</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>Therefore, our protectiveness determination with respect to PFAS is “Protectiveness Deferred” Basewide.</p> <p>The Regional Water Board has not provided a Basewide exemption for groundwater as a drinking water source, while groundwater at or near the site is not currently used as a drinking water source (i.e., for comparison to the USEPA National Drinking Water Regulations (NDWR) for six primary PFAS compounds), risk for ecological receptors and therefore, recreational users, to PFAS in contaminated surface water and groundwater is not accounted for or established in this response. The Argonne ecological screening values provided are on the order of a wide range, up to over three orders of magnitude for perfluorooctanoic acid (PFOA). These values also do not represent established site-specific risk criteria as agreed to by the Federal Facility Agreement parties.</p> <p>Further, there is no evidence that the durable covers currently in-place can prevent PFAS from leaching from soil to groundwater or surface water at the site, which is a potential migration pathway. Considering the highly mobile nature of PFAS compounds, these pathways likely result in PFAS discharge to Bay waters and exposure to offshore receptors. The risk for exposure to these receptors has yet to be addressed by site remedies and demonstrate that protectiveness with regard to site PFAS has not been established.</p> <p>Regional Water Board Response 4b: The response that the properties of the near-shore slurry wall at Parcel E-2 (i.e. a cement-bentonite mixture) are capable of inhibiting PFAS transport in groundwater, and groundwater to surface water, is not informed nor substantiated.</p> <p>PFOA detected in groundwater upgradient of this location (i.e. 18 micrograms per liter at IR01MW60A) is multiple orders of magnitude more than its NDWR of 4 nanograms per liter. This indicates that there is a significant PFAS plume present within groundwater at Parcel E-2. No data was provided to support that this site remedy, which was not designed to mitigate PFAS releases in groundwater, is able to prevent a PFAS plume of this magnitude from migrating in groundwater.</p>	<ul style="list-style-type: none"> As presented in Section 1.3.4.3, groundwater within the A-aquifer (and portions of the B-aquifer within Parcel C) is unsuitable for drinking water. Additionally, the City and County of San Francisco prohibits installation of domestic wells within city and county limits. For soil, the Navy maintains durable covers and implements ICs to restrict human and terrestrial ecological receptor exposure to soil throughout all parcels at HPNS. <p>The following text has been added to Section 1.4.1: <u>Regarding the potential pathway of groundwater discharge to surface water and exposure to aquatic receptors in the bay, the Navy’s CERCLA PFAS SI data and existing site remedies were evaluated by the Navy. The following information and data support there is likely no imminent CERCLA risk:</u></p> <ul style="list-style-type: none"> <u>The highest PFAS concentrations were detected in wells in Parcel E-2 (including PFOA at 18 µg/L). This specific location is upgradient to the nearshore slurry wall and the slurry wall is designed to inhibit migration of COCs in groundwater to the bay. The cement-bentonite mixture is expected to inhibit PFAS based on how they inhibit VOCs.</u> <u>The PFAS detections in other identified near shore perimeter groundwater wells across HPNS were 1 to 2 orders of magnitude lower than the highest concentration at Parcel E-2, the PFAS SI results at these wells ranged from 0.14 µg/L to a maximum concentration of 3.2 µg/L (PFOS).</u> <u>Published ecological screening values for aquatic receptors (Argonne, 2021) are:</u> <ul style="list-style-type: none"> <u>PFOS: 0.117 to 22.6 µg/L</u> <u>PFOA: 6.12 to 1,580 µg/L</u> <p><u>In summary, based on the above lines of evidence, there is no known imminent risk from PFAS to human or ecological receptors at HPNS.</u></p> <p>In addition, parcel-specific discussions as Other Findings in Sections 3 through 6 present individual areas that were identified for further investigation under</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>PFAS compounds are known to be considerably more mobile and pervasive compared to VOCs, so it is unclear how this remedy can inhibit this contamination. PFAS compounds are also considerably more toxic at minor concentrations compared to VOCs (e.g. compared to tetrachloroethene federal maximum contaminant level of 5 micrograms per liter), so it should be expected that PFAS are more difficult to contain with the same remedy. In addition, it is also unclear how the physical extent of the remedy (i.e. depth and lateral extent) was designed to mitigate this high concentration PFAS plume.</p> <p>Further, no downgradient data, either in surface water or groundwater, exist to support that this remedy is currently functioning to inhibit PFAS migration.</p> <p>Regional Water Board Response 4c: Based on the information provided above, we disagree with the rationale for the Navy's protectiveness determination with respect to PFAS. As stated in USEPA's April 3, 2024, RPM Bulletin 2024-01 (Considerations When Reviewing PFAS in Five-Year Reviews):</p> <p>To build a case to support the analysis of whether the newly identified contaminants could impact the protectiveness of the existing remedy, the FYR should incorporate what is known and not known about the contamination, <u>and whether existing remedies may fully or partially mitigate risks.</u></p> <p>Because there is insufficient data available at this time, prior to the initiation of the remedial investigation, a Protectiveness Deferred determination should be assigned with respect to site PFAS.</p> <p>Further, the June 2011 Navy policy which was provided does not substantiate the statement in the response that "an emerging contaminant should only affect a protectiveness determination if the emerging contaminant is present at a concentration posing a potential unacceptable risk at the site and the existing remedy does not address the current or future exposure to the emerging contaminant." The June 2011 policy only refers to investigation of the emerging contaminant itself and does not reference initiation of remedial</p>	<p>the SI, based on historical site use or data collected during previous investigations.</p> <p>Reference:</p> <p>Argonne National Laboratory (Argonne). 2021. Derivation of PFAS Ecological Screening Values. Environmental Science Division, Argonne National Laboratory. Completed under interagency agreement between the U.S. Department of Energy (DOE), Argonne National Laboratory (Argonne), and AFCEC. Final. September. https://www.denix.osd.mil/dodepa/denix-files/sites/85/2022/10/Final-PFAS-ESV-Report_Sept-2021_508.pdf</p> <p><u>Response to Additional Comments:</u></p> <p>The lines of evidence provided were assessed by the Navy to determine if there is a potential imminent CERCLA risk from PFAS that would require an action other than proceeding with the CERCLA process, which is completion of the Basewide PFAS Remedial Investigation (RI) to determine if there are CERCLA PFAS risks present at HPNS. The Navy reiterates our FYR policy and guidance, which discusses that it is generally not appropriate to assess remedy protectiveness from an emerging or new contaminate until a CERCLA risk for that contaminant is established, at which point, an evaluation of the existing remedies can be assessed. If at any time during the CERCLA process, the Navy finds evidence or data to suggest that an imminent human health or ecological risk exists at the sites, the Navy will take appropriate actions. However, the data and site knowledge, at this time, does not indicate any imminent risk from PFAS at HPNS.</p> <p>The HPNS PFAS RI is planned for award this fiscal year. The PFAS RI will further investigate several of the points identified by the Waterboard including migration pathways, mobility of PFAS, and completion of a risk assessment for ecological receptors and recreational users in surface water and groundwater. The Argonne PFAS ecological screening values (ESVs) are provided for information and will be utilized during the RI as an initial screening level criteria only. If deemed necessary, site-specific ecological risk criteria will be established in agreement with the FFA parties as stated by the Waterboard. The discussion of the existing Parcel E-2 remedy components and durable</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>investigations precluding assignment of protectiveness determinations. Rather, this policy states the investigation of an emerging contaminant should proceed based on whether “the contaminant may call into question the protectiveness of either the remedy or the RAOs.”</p> <p>Therefore, our protectiveness determination with respect to PFAS is “Protectiveness Deferred” Basewide</p>	<p>covers with respect to the PFAS SI findings was only to identify that there are existing remedies in place where there is PFAS contamination identified. The site-specific analysis will be conducted as part of the RI.</p> <p>Therefore, the Navy respectfully disagrees with the Waterboards determination that a "Protectiveness Deferred" determination basewide for PFAS is required at this time. Continuing the CERCLA process for PFAS at HPNS is appropriate and protectiveness will be assessed once the PFAS CERCLA risk assessment is complete.</p> <p><u>Additional Response based on Water Board New Comment #1 Below. Included in this Comment Response for completeness:</u></p> <p>Figures from the SI for each Parcel have been added as Appendix G and referenced in respective Other Findings sections.</p> <p>The following text was also added to the Other Findings section of the Five-Year Review Summary Form:</p> <p><u>Per- and Polyfluoroalkyl Substances</u></p> <p><u>The Navy is in the process of investigating per- and polyfluoroalkyl substances (PFAS) from historical use of PFAS-containing materials. Potential exposure pathways are under control through existing remedy components (institutional controls and durable covers) and data indicate that there is likely no imminent CERCLA risk while PFAS are investigated under the CERCLA process. The following areas are under investigation for PFAS:</u></p> <ul style="list-style-type: none"> • <u>Parcels B-1, B-2, C, D-1, G, E, and E-2: A-aquifer groundwater</u> • <u>Parcel B-1: IR-10 (Battery and Metal Plating Shop)</u> • <u>Parcel C: Building 215, Fire Station</u> • <u>Parcel D-1: Poseidon Area (Buildings 377, 384, 385, and 387), IR-69 (Bilge Water Pump House), and IR-70 (Former drum and tank storage area)</u> • <u>Parcel G: IR-09 (Pickling and Plating Yard)</u>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p><u>Key PFAS investigation milestones include:</u></p> <ul style="list-style-type: none"> <u>Final Basewide Remedial Investigation (RI) Work Plan – 4/30/2025</u> <u>RI Fieldwork – Spring/Summer 2025</u> <u>Final Basewide RI Report – 8/31/2026</u>
5	General	<p>Comment 5a: With respect to protectiveness determinations, additional justification/evaluations for climate vulnerability should be presented in the Draft- Final Five-Year Review. Media of concern and associated exposure assumptions should be considered in the context of existing Institutional Controls and Engineering Controls or other remedy components to support the Navy’s protectiveness statements. Otherwise, a “Protectiveness Deferred” determination may be most appropriate in the context of climate vulnerability.</p> <p>Comment 5b: There is an urgency to conduct parcel-specific climate vulnerability assessments at all parcels as soon as practical, with a prioritization of Parcel D-1, Parcel E, and Parcel E-2.</p> <p>The Draft Five-Year Review does not adequately support the parcel specific protectiveness determinations with respect to the findings in the Climate Resilience Assessment (CRA), Appendix A, and the site-specific data and information collected during the reporting period.</p> <p>The CRA is a screening-level assessment of climate-related hazards, their potential impacts, and whether vulnerabilities were identified that may impact the protectiveness of the remedies at HPNS.</p> <p>We acknowledge that this CRA is a screening or baseline assessment, but additional parcel-specific evaluation is required. Examples of the urgency for additional work include but are not limited to:</p> <ul style="list-style-type: none"> Transient inundation is likely to occur within the next 11 years at Parcel D-1, Parcel E, and Parcel E-2. 11 years may not leave adequate time for planning if remedies require modifications to become or remain protective. 	<p><i>General Response Regarding the Climate Resilience Assessment</i></p> <p><i>Note that several changes were made to the CRA based on Agency, City of San Francisco and Public comments. Specific changes that address comments are provided in the responses below and additional changes can be reviewed in the Redline-Strike-out provided in the draft-final Five-Year Review.</i></p> <p>The Navy Framework for CRA (2024) recommends that climate impacts on protectiveness determinations can be better evaluated with detailed site-specific studies have been conducted to verify projected impacts and vulnerabilities identified in the screening level CRA. As plans for these site-specific studies are developed, the agencies will have the opportunity to provide input. A prioritization meeting with the Navy and Agencies is proposed for November 2024.</p> <p>The following text has been added to the Other Findings for respective parcels (3.6.1.2, 4.6.1.2, 5.6.1.2, 6.6.1.2):</p> <p><u>The CRA estimates that groundwater emergence may occur in [IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas] by the year 2065.</u></p> <p><u>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum.</u></p> <p><u>However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the potential for increased vapor intrusion is identified in other CERCLA documents, ARICs for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<ul style="list-style-type: none"> As documented in Regional Water Board (M. Snow) email dated January 30, 2024, flooding/standing water observed January 23, 2024, at Parcel E may demonstrate that transient inundation predictions for 2035 are not conservative enough. Observance of “sinkholes” attributed to tidal waters and subsidence near Buildings 205, 207, and 208 at Parcel C. COCs and chemicals of potential concern (COPCs) in soil not currently saturated may be subject to mobilization with a small rise in groundwater elevation. <p>Parcel-specific assessments should be conducted at all parcels. These concerns apply to: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel UC-2, Parcel D-1, Parcel D-2, Parcel UC-1, Parcel G, Parcel E, Parcel E-2, and UC-3. However, Parcel D-1, Parcel E, and Parcel E-2 should be prioritized.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response 5: The Water Board generally concurs with these recommendations; however, we request the following response be addressed.</p> <p>Describe why Parcel UC-1, Parcel UC-2, Parcel UC-3, and Parcel D-2 were not included in the list of site-specific studies to address climate vulnerability. It is our understanding that while these parcels have less prioritization compared to other, more vulnerable site locations, they are still susceptible to climate vulnerability (e.g. transient inundation, groundwater rise, etc.) and should also be included for site-specific evaluations.</p> <p>Additionally, Site-specific climate vulnerability studies[sic] should be discussed in and presented on in parcel specific sections and tables for “Issues, Recommendations, and Follow-up Actions.”</p>	<p>vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</p> <p>For Parcel E-2, the following text has been added:</p> <p><u>Although the Parcel E-2 remedy components such as the sea wall were designed for resilience through a 3-foot rise in sea level (similar to the 2065 scenario), a site-specific study is recommended to evaluate the longer-term scenarios such as 2100.</u></p> <p>The following text has been added to Other Findings for Parcel D-1:</p> <p><u>The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035. Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025.</u></p> <p>The Water Board’s concerns have been noted and will be considered in preparation for the site-specific studies. The Navy plans to conduct these studies at all parcels that are anticipated to be affected by SLR which includes: IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, Parcel D-1, Parcel G, Parcel E, and Parcel E-2.</p> <p>Response to Additional Comment:</p> <p>Parcel UC-3 was included in the CRA. Parcel UC-1, UC-2, and Parcel D-2 were not initially included in the CRA because the parcels had been transferred, however they were added into the Draft-Final CRA. The only impacts identified were minor flooding along the borders during a storm surge in 2065 at Parcels UC-1, UC-2, and D-2.</p> <p>Because the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review (see above), the Other Findings sections of the Five-Year Review Summary Form and respective parcels are used to document matters that the BCT/FFA parties have determined are important to track. Changes based on this and comments made by DTSC are added above in Blue font. In addition to the changes listed</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p>above for each respective parcel, the following changes have been made to the Other Findings section of the Five-Year Review Summary Form:</p> <p>Climate Change</p> <p>The Navy recognizes climate change is occurring and based on a screening level Climate Resilience Assessment (CRA) (Appendix A), sea level rise (SLR) is the major variable of climate change that could affect the remedies at HPNS.</p> <p>The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035 and in IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas by the year 2065. However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the potential for increased vapor intrusion is identified in other CERCLA documents, areas requiring institutional controls (ARICs) for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</p> <p>Based on the results of the CRA, the Navy will continue to monitor ongoing groundwater concentration and elevation data onsite through the Basewide Groundwater Monitoring Program (BGMP) and evaluate this data as it relates to the effectiveness of site remedies. The Navy will also regularly evaluate nearby tidal gauge data to verify SLR projections. <u>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025. Additional studies are planned for remaining parcels and a meeting with the Navy and Agencies is planned for November 2024 to discuss the scope and priority of these studies as well as preparation of an adaptation plan, or similar document, if the site-specific studies show that CERCLA-type human health or ecological risk attributable to climate change requires adaptative measures.</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p>Key climate change milestones include the following:</p> <ul style="list-style-type: none"> • <u>Scoping and Prioritization Meeting – 11/30/2024</u> • <u>Initiation of Parcel D-1 Study – Spring 2025</u>
Specific Comments			
1	Five Year Review Summary Form, Page XVII, and Section 1.1 Purpose and Approach, Section 2.1 Site Interviews	<p>Page 1.1 text states, “[T]he Five-Year Review included a document and data review, required visual site inspections, and interviews.”</p> <p>Specific Comment 1: The Regulatory Agency site inspection was not conducted until after the Draft Five-Year Review was submitted. Also, it is unclear why interviews were limited to Navy contractors and were not conducted with Navy personnel, Regulatory Agencies, local authorities, including San Francisco Department of Public Health (SFDPH), nearest neighbors, and/or community members; this is inconsistent with USEPA guidance (2001).</p> <p>The form should be updated to include January 23, 2024, the date of the Regulatory Agencies’ Fifth Five-Year Review site inspection. Justification for why interviews were limited to Navy contractors should be provided. Also, interviews should be conducted with the Navy personnel, Regulatory Agencies, SFDPH, nearest neighbors, and/or community members and provided in the Draft-Final Five-Year Review.</p>	<p>EPA 2001, in Section 3.5.2 states “Interviews should be conducted, if necessary, to provide additional information about a site's status. The scope of interviews should be tailored to the remedy evaluation on a site-specific basis. Those interviewed may include the site manager; site personnel; Federal, State, and Tribal regulatory authorities; local officials; community action groups or associations; residents and businesses located near the site; and other pertinent organizations or individuals.”</p> <p>Because the Navy retains control and access to the parcels under this Five-Year Review, the Navy focused interviews on personnel responsible for operating and conducting the remedial action as well as complying with ARICs and other restrictions on Base. While the Navy did not interview all stakeholders, the Navy did provide opportunities for stakeholder input and feedback as summarized below and added to Section 2.5:</p> <p><u>The following community engagement and opportunities for stakeholder feedback were provided by the Navy:</u></p> <ul style="list-style-type: none"> • <u>Meetings with Agencies and SFDPH to review parcel-specific findings and receive preliminary comments and feedback (5 biweekly 2-hour long meetings in February, March, and April)</u> • <u>Providing the Draft Five-Year Review for public inspection and comment from February 7, 2024 to May 7, 2024</u> • <u>Public outreach to notify the community about the CRA and Five-Year Review:</u> <ul style="list-style-type: none"> - <u>1/22/24 – Navy presentation to Hunters Point Shipyard Citizens Advisory Committee</u>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<ul style="list-style-type: none"> - <u>2/26/24 – Email to Parcel A homeowner/resident points of contact for posting</u> - <u>2/29/24 – Mailer to approximately 17,000 addresses</u> - <u>3/1/24 – Outgoing informational message on HPNS Info Line</u> - <u>3/1/24 – Mailer to approximately 90 community groups and organizations</u> - <u>3/8/24 – Email to Parcel A homeowner/resident points of contact</u> - <u>3/25/24 – Navy presentation to Hunters Point Shipyard Citizens Advisory Committee</u> - <u>3/26/24 – Electronic newsletter to approximately 1,300 addresses</u> - <u>4/11/24 – Email to Parcel A homeowner/resident points of contact</u> - <u>3/18/24 – Electronic newsletter to approximately 1,280 addresses</u> - <u>Various meetings and discussions between Michael Pound and Shipyard Trust for the Arts members</u> - <u>Meeting announcement/materials on BRAC website</u> - <u>4/1/24 – Outgoing information message on HPNS Info Line</u> - <u>4/17/24 – Electronic newsletter to approximately 1,300 addresses</u> - <u>4/22/24 – CRA Workshop (posterboards, presentation, and a question-and-answer session)</u> - <u>4/27/24 to 4/28/24 – HPNS Bus Tours – information provided / questions answered about Five-Year Review and CRA (as appropriate with discussions)</u> - <u>4/29/24 – Navy presentation to SF Shipyard (Parcel A) homeowners and residents; CRA workshop slide deck was included in presentation materials</u> <p>The January 23, 2024 site inspection with regulatory agencies was added to the Summary Form and Section 2.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
2	Five Year Review Summary Form, Page XVII; Section 1.1 Purpose and Approach, and Section 2.6, Next Five-Year Review	<p>page 1-1 text states, “The triggering action for statutory Five-Year Reviews at HPNS was the date of mobilization for the remedial action (RA) activities at Parcel B, which was July 8, 1998. The triggering action for this Fifth Five-Year Review is the signature of the Fourth Five-Year Review, July 31, 2019 (Navy, 2019)”. Section 2.6, page 2-2 text states, “[T]he next Five-Year Review is due to be finalized 5 years from the signature of this Five-Year Review, which is anticipated to be in 2029.”</p> <p>Specific Comment 2: Per USEPA letter dated November 16, 2023, the Sixth Five- Year Review is due November 8, 2028; therefore, the Draft-Final Five-Year Review should be revised accordingly.</p>	<p>The May 2011 Navy/Marine Corps Policy for Conducting CERCLA Five-Year Reviews establishes subsequent signature dates for Five-Year Reviews as no more than five years from the date of the last signature (Section 5.2a, Navy 2011), therefore the signature date of the Sixth Five-Year Review will be July 31, 2029 (or 5 years from the signature date of this Five-Year Review).</p> <p>Reference: Navy. 2011. <i>Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews</i>. June.</p>
3	Section 1.2 Environmental Restoration Program, and Figure 1-2 Installation Restoration Sites	<p>page 1-2 the text states “In most cases, IR sites were identified by a two-digit number (for example, IR-02),” but depicted as single digits on Figure 1-2 for IR sites 1 through 9 instead of 01 through 09.</p> <p>Specific Comment 3: For clarity two-digit nomenclature for IR sites 01 through 09 should be used throughout the Five-Year Review.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 3: could not be evaluated without the revisited document.</p>	This change has been made.
4	Section 1.4.1 Per- and Polyfluoroalkyl Substances	<p>page 1-7 text states “Because investigation of PFAS is ongoing and it has not yet been determined whether PFAS pose unacceptable risk that requires RA [Remedial Action], and because a remedy for PFAS has not yet been determined, a protectiveness determination cannot be made.”</p> <p>Specific Comment 4: This is not consistent with USEPA Guidance (September 2012) regarding protectiveness statements for emerging contaminants. Per USEPA Guidance (September 2012) for emerging contaminants protectiveness is deferred. Unless parcel specific evaluations of existing PFAS concentrations, likely data gaps, media of concern, and exposure assumptions are conducted in the context of existing Institutional Controls, Engineering Controls, or other remedy</p>	Please see response to Water Board Protectiveness Determination Comment #4

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		components to support the Navy's protectiveness statements, then "Deferred Protectiveness" is appropriate for sites with PFAS detections. See Protectiveness Determination Comment 4 above.	
5	Section 1.4.3.1 Progress Since the Fourth Five-Year Review	<p>Discussion in this section was limited to the radiological retesting.</p> <p>Specific Comment 5: This section should be consistent with the issues, recommendations, and other findings as presented in the last Five-Year Review and not limited to radiological retesting. The Final Fourth Five-Year Review (2019) "Issues, Recommendation and Other Findings" included the following items:</p> <ul style="list-style-type: none"> SVE [soil vapor extraction] implementation in Parcels B-1 and C is reducing source mass, but with limited effectiveness due to diffusion-limited conditions in the subsurface. The Regulatory Agencies do not agree with the Navy's risk assessment methodology used to reduce the ARICs [areas requiring institutional controls] for VOC [volatile organic compounds] vapors. The Navy has determined that a significant portion of the radiological survey and remediation work completed to date was not reliable because of manipulation and/or falsification of data by one of its radiological contractors. A long-term protectiveness evaluation of the radiological RGs [remediation goals] has not yet been completed for this fourth Five-Year Review, and it is currently not known if the RAOs for radionuclides have been achieved in Parcels B-1, B-2, C, D-1, D-2, G, E, UC-1, UC-2, and UC-3. <p>Specific updates for the SVE implementation at Parcels B-1 and C, as well as the status of the disagreement regarding the Navy's risk assessment methodology used to reduce the ARICs for VOC vapors from the Fourth Five-Year Review, including milestones and timelines, should be provided in the Draft-Final Fifth Five-Year Review.</p>	<p>The discussion in Section 1.4.3.1 was specific to the radiological issue identified in the previous five-year review because it was a basewide issue. The other parcel-specific issues identified in this comment are addressed in their respective sections.</p> <p>Specific updates for the SVE implementation and the status of the disagreement regarding the Navy's risk assessment methodology used to reduce ARICs for VOC vapors from the Fourth Five-Year Review, including milestones are provided for Parcel B-1 in Table 3-4, Parcel C in Table 4-5, and Parcel D-1 and G in Table 5-5.</p> <p>The status of the disagreement regarding the Navy's risk assessment methodology used to reduce the ARICs for VOC vapors has been updated on Table 3-5 as follows:</p> <p><u>Completed September 2023, In Progress.</u> The work plan was finalized in September 2023 and excavation fieldwork is currently underway and will be completed in fall 2024 followed by a year of quarterly soil gas monitoring.</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
6	Section 3.4.1.2, 3.4.2.2, 3.4.3.2, 4.4.1.2, 6.4.2.2	<p>Provides information regarding remedy operations and maintenance for the durable covers and monument surveys.</p> <p>Specific Comment 6a: The 2023 monument surveys results were not provided, and the frequency of monument surveys is not specified in the Draft Five-Year Review. Provide the 2023 monument survey results in the Draft-Final Five-Year Review.</p> <p>Specific Comment 6b: Provide the frequency of the monument surveys by parcel, i.e., IR Site 07/18, Parcel B-1, Parcel B-2, Parcel C, and Parcel E-2.</p> <p>Specific Comment 6c: Consider increasing the frequency of monument surveys in support of evaluating impacts on the remedies due to sea level rise/groundwater rise.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 6a: Consider the defining “negligible change” in the text e.g., “negligible change (i.e., less than 0.1 foot).”</p>	<p>Response to Comment 6a: Based on the negligible changes in elevation noted during the 2019 and January 2021 survey events, the January 2021 O&M Report recommended monument surveys need not be repeated until 2024-2025. The 2024 O&M report (reporting on inspection year 2023) repeats this recommendation under Section 2.9 Settlement Monument Surveys; therefore, no monuments were surveyed last year (2023). Following this logic, the next round of settlement monument surveys should be scheduled for this year (2024).</p> <p>The text in Section 3.4.1.2, Durable Cover Maintenance (IR-07/18) has been changed as follows:</p> <p>Therefore, the next time Monument 2 will need to be surveyed is 2024. Monument 1 in IR-07/18 will be resurveyed in 2023. Based on the negligible change (less than 0.1 foot) in historical survey monument elevations, the next round of settlement monument surveys will be in 2024.</p> <p>The text in Section 3.4.2.2, Durable Cover Maintenance (Parcel B-1) has been changed as follows:</p> <p>Therefore, the next time Monument SM-1 will need to be surveyed is 2024. Monuments SM-2 and SM-3 will need to be resurveyed in 2023. Based on the negligible change (less than 0.1 foot) in historical survey monument elevations, the next round of settlement monument surveys will be in 2024.</p> <p>The text in Section 3.4.3.2, Durable Cover Maintenance (Parcel B-2) has been changed as follows:</p> <p>Monument SM-4 will be resurveyed in 2023. Based on the negligible change (less than 0.1 foot) in historical survey monument elevations, the next round of settlement monument surveys will be in 2024.</p> <p>Response to Comment 6b: O&M plans for Parcels B-1 (Engineering/Remediation Resources Group, Inc. 2016), B-2 (INNOVEX-ERRG Joint Venture 2018), C (Tetra Tech EC, Inc. and Engineering/Remediation Resources Group, Inc. 2017), D-1, (APTIM 2018; 2019), and G (Arcadis U.S., Inc. 2014) and IR-07/18 (Engineering/Remediation Resources Group, Inc. 2012) specify that a survey of settlement monument elevations be performed if a difference in elevation of 0.1 foot or more is observed in survey data obtained</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p>during the previous two years. If negligible changes (i.e., less than 0.1 foot) in monument elevation are observed during the two previous years, then the frequency of surveying can be decreased to once every five years. Currently all monuments are surveyed every 5 years based on previous data.</p> <p>Response to Comment 6C: The Navy may consider increasing the frequency of monument surveys based on site-specific studies.</p> <p>References:</p> <p>APTIM, 2018, <i>Final Post-Construction Operation and Maintenance Plan, Remedial Action in Parcel D-1</i>, Hunters Point Naval Shipyard, San Francisco, California, March.</p> <p>APTIM, 2019, <i>Final Addendum 01, Post-Construction Operation and Maintenance Plan, Remedial Action in Parcel D-1</i>, Hunters Point Naval Shipyard, San Francisco, California, July.</p> <p>Arcadis U.S., Inc., 2014, <i>Final Operation and Maintenance Plan for Parcel G</i>, Hunters Point Naval Shipyard, San Francisco, California, May 23</p> <p>Engineering/Remediation Resources Group, Inc., 2012, <i>Final Operation and Maintenance Plan for Installation Restoration Sites 07 and 18 in Parcel B</i>, Hunters Point Naval Shipyard, San Francisco, California, October.</p> <p>Engineering/Remediation Resources Group, Inc., 2016, <i>Final Operation and Maintenance Plan for Parcel B-1</i>, Hunters Point Naval Shipyard, San Francisco, California, June.</p> <p>Gilbane Federal, 2018, <i>Final Operation and Maintenance Plan, Remedial Action, Parcel UC-3</i>, Hunters Point Naval Shipyard, San Francisco, CA, July.</p> <p>INNOVEX-ERRG Joint Venture, 2018, <i>Final Operation and Maintenance Plan for Parcel B-2</i>, Hunters Point Naval Shipyard, San Francisco, California, July.</p> <p>Tetra Tech EC, Inc. and Engineering/Remediation Resources Group, Inc., 2017, <i>Final Operation and Maintenance Plan for the Durable Covers in Parcel C</i>, Hunters Point Naval Shipyard, San Francisco, California, February.</p> <p>Response to Additional Comment:</p> <p>This has been added above in Blue font text and to the respective section in the Draft-Final Five-Year Review.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
7	Section 3.4.1.1 Remedy Implementation	<p>page 3-7 text states “[S]ince at least 2009, concentrations of COCs and ROPCs [radionuclides of potential concern] have remained under their TLs [trigger levels], except for lead in September 2017 and March 2022 (TRWB, 2023). Concentrations of lead exceeded the TL but were within the same order of magnitude as the TL (14.44 µg/L) at two locations (23 and 23.9 µg/L) in March 2022 and were below laboratory detection limits during the September 2022 event (Appendix E, Figure 3-5).”</p> <p>Specific Comment 7: The Draft-Final Five-Year Review should provide a discussion of groundwater flow directions and include groundwater flow path depictions on Figure 3-5, and trend analysis for lead concentrations in wells IR07MW24A and IR07MW26A. With the fluctuating lead concentrations in groundwater and the lack of sentinel wells between the elevated concentrations in groundwater and the Bay, it is unclear if the remedy is adequately protective of ecological receptors and that lead is not being discharged to the Bay.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comments 7 and 11: Response does not address the request with respect to the addition of a discussion of groundwater flow or request for depiction for groundwater flow paths on a figure. These requests will assist the public in understanding the relationship between groundwater, surface water, and contamination at the Parcels.</p>	<p>Because only two exceedances of lead were reported over the last 7 years of semiannual sampling, no additional action is recommended outside of routine monitoring at this time. The following text has been added to the second paragraph of the Groundwater Monitoring subsection of Section 3.4.1.1:</p> <p>...The TL exceedances have been infrequent during monitoring. <u>During the last five years, lead was reported below the TL in April 2019 and September 2020. Lead was below laboratory detection limits in September 2019, May 2020, March 2021, September 2021, and September 2022.</u></p> <p>Note that the Five-Year Review also references the RAMP protocol when concentrations consistently exceed trigger levels: <i>However, if concentrations consistently exceed a TL, the Remedial Action Monitoring Plan (RAMP) provides several additional evaluations that may occur, including increasing the frequency of monitoring, monitoring farther downgradient, using site-specific detailed information to more accurately estimate attenuation, or implementing a selected remediation alternative for groundwater treatment (ChaduxTt, 2010).</i></p> <p>Response to Additional Comment:</p> <p>General groundwater flow direction is discussed in Section 3.2.1.2, 4.2.1.2, 5.2.1.2, and 6.2.1.2 for both the A- and B-aquifers. Groundwater flow was not added to the figures to maintain consistency with the BGMP report exceedance figures.</p>
8	Section 3.5.1, Question A: Is the Remedy Functioning as Intended by the Decision Document? and Section 3.5.1.3, Parcel B-2	<p>with respect to IR Site 26, the Navy responded “yes” to Question A.</p> <p>Specific Comment 8: A “yes” response is inconsistent with the mercury exceedances in groundwater, as well as not adequately reflecting regulatory comments and concerns since the Forth Five-Year Review. The Draft-Final Fifth Five-Year Review should be revised to respond “No” to Question A. See Protectiveness Determination Comment 1 above.</p> <p>Additional Comment Received 6/4/2024</p>	<p>Please see response to Water Board’s Protectiveness Determination General Comment #1.</p> <p>The multiple lines of evidence presented in the Five-Year Review suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. The Navy recognizes a lack of mercury data at the groundwater-surface water interface, therefore, a definitive “Yes” has been deleted and protectiveness has been changed to “Protectiveness Deferred”.</p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		Regional Water Board Response Specific Comment 8, 9, and 10: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 1 (General) above.	
9	Section 3.5.2	<p>Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid? with respect to IR Site 26, the Navy responded "yes" to Question B.</p> <p>Specific Comment 9: It is not clear if the cleanup levels associated with mercury in groundwater are still valid. As the Navy has not responded to the Regional Water Board Letter dated March 14, 2022, regarding the development of the 0.6 µg/L as the Parcel B RD trigger level for mercury. The response to Question B may be "no" and the Navy should provide a response to the Regional Water Board's concerns with respect to the mercury trigger level to justify that the RAOs are still valid. See Protectiveness Determination Comment 1 above for additional details.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 8, 9, and 10: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 1 (General) above.</p>	<p>The following text was added to Question B, Section 3.5.2.3:</p> <p><u>There have been no changes in site conditions or exposure parameters or mercury toxicity values that would call into question the selected trigger level of 0.6 µg/L, which is the background concentration of mercury in groundwater. The calculation methods and supporting information for this value are provided in the Estimation of Hunters Point Shipyard Groundwater Ambient Levels Technical Memorandum (PRC, 1996a).</u></p> <p>The approach to calculate these background ambient levels was agreed upon by the BCT and the use of this value in the ROD was also agreed upon by the BCT.</p> <p>Note that the document calculating background values is available in the administrative record: https://administrative-records.navfac.navy.mil/Public_Documents/SOUTHWEST/HUNTERS_POINT_NS/N00217_005639.PDF</p>
10	Section 3.6 Issues, Recommendations, and Follow-up Actions and Table 3-8 Parcel B Issues, Recommendations, and Follow-up Actions	<p>[This section] provides a summary of the Issues, Recommendations, and Follow-up Actions for Parcel B, including, Parcel B-2 IR Site 26.</p> <p>Specific Comment 10: There are outstanding Regulatory Agencies' comments and recommendations related to the remedy at Parcel B-2 IR Site 26 that were not included in this section or on this table, as detailed in the Protectiveness Determination Comment 1 above. The following issues need to be included in this section: 1) Metafix has failed to reduce mercury in groundwater to concentrations below the Parcel B RD trigger level and 2) elevated concentrations of mercury in</p>	Please see response to Water Board's Protectiveness Determination General Comment #1.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>groundwater are in “sentinel” wells, representing a discharge to the Bay. The recommendations and follow-up actions should include development of a new primary document work plan focused on alternative treatments and treatment methodologies as a priority to mitigate discharge of mercury to the Bay and ensure protectiveness.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 8, 9, and 10: The responses do not adequately address Regional Water Board’s concerns, refer to our evaluation of Response to Protectiveness Determination Comment 1 (General) above.</p>	
11	Figure 3-5, Figures 4-4 through 4-7	<p>The figures show exceedances of remediation goals in groundwater.</p> <p>Specific Comment 11: The figures showing exceedances of remediation goals in groundwater do not include groundwater flow direction. General groundwater flow direction arrows should be presented on figures that show exceedances of remediation goals for COCs in groundwater.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comments 7 and 11: Response does not address the request with respect to the addition of a discussion of groundwater flow or request for depiction for groundwater flow paths on a figure. These requests will assist the public in understanding the relationship between groundwater, surface water, and contamination at the Parcels.</p>	<p>Figures showing the exceedances of RGs are consistent with the Final 2023 BGMP report and do not require modification.</p> <p>Response to Additional Comment:</p> <p>General groundwater flow direction is discussed in Section 3.2.1.2, 4.2.1.2, 5.2.1.2, and 6.2.1.2 for both the A- and B-aquifers. Groundwater flow was not added to the figures to maintain consistency with the BGMP report exceedance figures.</p>
12	Section 4.2.1.1, 5.2.1.2, 6.2.1.1	<p>Geology and Hydrogeology: Sections describe hydrogeologic characteristics including B-Aquifer.</p> <p>Specific Comment 12: B-Aquifer groundwater elevations are not provided in these sections. B-Aquifer groundwater elevation ranges should be provided in Section 4.2.1.1, Section 5.2.1.2, and Section 6.2.1.1.</p>	<p>B-Aquifer elevations were added as follows:</p> <p>Section 4.2.1.2</p> <ul style="list-style-type: none"> B-Aquifer: The B-aquifer is present over an area of approximately 22 acres, or about 28 percent of Parcel C, in the east-central area. It is semiconfined by Bay Mud and Sandy Lean Clay (ECC-Insight, 2019). It is not present at Parcel UC-2. <u>Groundwater elevations range from 1 foot below mean sea level (msl) in the eastern portion of Parcel C during spring and summer, to</u>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
			<p><u>4 to 5 feet above msl in the western portion of the parcel (TRBW, 2023). Groundwater flow is generally to the southeast.</u></p> <p>Section 5.2.1.2</p> <ul style="list-style-type: none"> B-Aquifer: The B-aquifer consists of small laterally discontinuous permeable sediment lenses of gravel, sand, silty sand, or clayey sand intermingled with aquitard. The largest B-aquifer area is present near the center of the parcel (Parcel G) and is approximately 1,500 feet wide, 1,000 feet long and 20 to 30 feet thick. It is not present in Parcel D-2 and UC-1. <u>Groundwater elevations range from 0 to 2 feet above msl through the majority of Parcel D-1 and the eastern portion of Parcel G, to an elevation of 3 to 4 feet above msl in the western portion of Parcel G (TRBW, 2023). Groundwater flow is generally to the southeast.</u> <p>Section 6.2.1.2</p> <ul style="list-style-type: none"> B-Aquifer: Groundwater flow in the B-aquifer is generally toward the southeast. However, groundwater in Parcel E-2 from the B-aquifer flows west from the Panhandle Area to the adjacent offsite properties to the west (TRWB, 2022). <u>Groundwater elevations range from 0 to 2 feet above msl along the western portion of Parcel E-2 and a maximum of 9 feet above msl in the eastern portion of Parcel E-2. Elevations range from 0 feet above msl in the eastern portion of Parcel E to 5 to 6 feet above msl in the central coastal area of Parcel E (TRBW, 2023).</u> <p>Reference: TRBW. 2023. 2022 Basewide Annual Groundwater Monitoring Report, Hunters Point Naval Shipyard, San Francisco, California. Final. December.</p>
13	Section 4.4.1.1 Remedy implementation, Soil Excavation and Removal	The text discusses changes to the Remedial Action Work Plan (RAWP) based on the findings of Pre-RA investigation. For RU-C1 on page 4-6 the text states “[T]he Navy is evaluating options to treat the DNAPL source area and, subsequently, the associated groundwater plume.” And for RU-C2 the text states “The Navy is evaluating a revised approach to achieve soil RAOs and address a potential ongoing source to A-aquifer groundwater (ECC-Insight, 2019).” On page 4-8	<p>Section 4.4.1.1 has been revised to include which documents each respective study will be included in and the estimated schedule. The text has been revised as follows:</p> <p>RU-C1: [T]he Navy is evaluating options to treat the DNAPL source area <u>at Building 253</u> and, subsequently, the associated groundwater plume. <u>This work is anticipated in 2031.</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>for the Soil Vapor Extraction Monitoring the text states “[T]he Navy is in the process of reviewing the strategy for addressing soil gas at all Parcel C areas in conjunction with additional in situ groundwater remediation activities that are ongoing (ECCInsight and CDM Smith, 2019).”</p> <p>Specific Comment 13: The text discusses changes to the RAWP based on the findings of Pre-RA investigation but does not provide specificity regarding a timeline for how and when alternatives will be evaluated or provided for review. For clarity, Section 4.4.1.1 should be revised to indicate which documents these evaluations will be presented in and when they will be provided to the Regulatory Agencies for review.</p>	<p>RU-C2: The Navy is evaluating a revised approach to achieve soil RAOs and address a potential ongoing source to A-aquifer groundwater (ECC-Insight, 2019). <u>The work plan is anticipated in fall of 2027 and fieldwork is anticipated in late 2027/early 2028.</u></p> <p>RU-C4: The Navy has initiated a study to evaluate the fractured water bearing zone (F-WBZ) in the vicinity of elevated TCE reported during basewide groundwater monitoring. <u>The work plan is anticipated to be final in summer 2024 and fieldwork is anticipated in fall/winter 2024.</u></p> <p>Page 4-8 for the Soil Vapor Extraction Monitoring: “[T]he Navy is in the process of reviewing the strategy for addressing soil gas at all Parcel C areas in conjunction with additional in situ groundwater remediation activities that are ongoing (ECC-Insight, LLC and CDM Smith, 2019). <u>The work plan for post-remediation soil gas surveys at Parcel C is anticipated for spring 2029, and fieldwork is anticipated in 2029-2030.</u></p>
14	Section 4.4.1.2 Remedy Operations and Maintenance	<p>as stated on page 4-14, “[A] 7-foot-deep void observed along the pier edge that allowed water to wash in and out with the tide may have contributed to the sinkholes;” a number of “sinkholes” were observed and for some their presence was attributed to tidal action. Additionally, the text states that, “Subsidence was noted near Buildings 205, 207, and 208 between Dry Dock 2 and Dry Dock 3 that required extensive repairs outside of routine O&M, and 100 feet of permanent chain-link fence was installed across Building 208 to secure the end of the pier.”</p> <p>Specific Comment 14: It does not appear that existing Operations and Maintenance (O&M) methodologies are adequate to address these concerns. The Navy should provide the long-term strategies to address “sinkholes” and subsidence for Parcel C.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 14: The text should be updated to notify the public of the plan and include schedule timeframes for addressing these erosional features.</p>	<p>The Navy acknowledges that shoreline degradation is affecting the integrity of the durable covers and is conducting a shoreline assessment to identify and recommend repairs and/or stabilization of structures and shoreline.</p> <p>Repairs of the larger eroded areas that were identified as being outside of the scope of routine O&M are included in the remedy as a whole; however, at this time, the repairs are being deferred until the radiological retesting has been completed to minimize generating extra waste and maximize efficiency.</p> <p>The use of the term “sinkholes” has been replaced with “subsidence areas” to use more technically accurate language.</p> <p>Response to Additional Comment:</p> <p>The following text has been added to the Durable Cover Operations and Maintenance section of Section 4.4.1.2: <u>The Navy is currently conducting a shoreline assessment study to identify and recommend repairs and/or stabilization of structures and shoreline.</u></p> <p>The results of the study are pending and until results and recommendations are made, the magnitude and timeframe for repair is unknown at this time.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
15	Section 4.5.2 Question B	<p>with respect to Parcel C, the Navy responded “yes” to Question B.</p> <p>Specific Comment 15: The response to Question B should be “uncertain” at this time because the connection and communication between hydrogeologic units within Parcel C is not fully understood. See Protectiveness Determination Comment 2 above for additional details.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 15: The response does not address the Regional Water Boards comment; the data gaps will persist until the proposed investigations are complete therefore the response to Question B remains uncertain.</p>	<p>While data in the B-aquifer indicates VOCs are present at higher concentrations than at the time of the ROD, the concentrations reported in the B-Aquifer are lower than concentrations of the same constituents in the A-aquifer at the time of the ROD. The A-aquifer to surface water pathway was evaluated in the Parcel C ROD and concluded that only hexavalent chromium and zinc in groundwater may pose a potential risk to aquatic wildlife.</p> <p>Response to Additional Comment:</p> <p>Given that the B-aquifer was not included in the RAOs for Parcel C, this response has been changed to “uncertain” to reflect the data gap and deferred protectiveness determination. The text has been changed as follows:</p> <p><u>Uncertain.</u> Based on the results of the ARAR evaluation, HHRA analysis, and ERA analysis discussed in the following sections, the exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection are still valid for <u>soil and A-aquifer groundwater</u>. Although there have been some changes to toxicity values and risk assessment methods, these changes do not affect remedy protectiveness for <u>soil and A-aquifer groundwater</u>. However, chemicals were identified in the B-aquifer and F-WBZ groundwater that require additional investigation to determine if the exposure assumptions, toxicity data, cleanup levels, and RAOs at the time of remedy selection remain valid for these groundwater zones.</p>
16	Section 4.6, and Table 4-8	<p>provides a summary of the issues, recommendations, and follow-up actions for Parcel C.</p> <p>Specific Comment 16: Radiological retesting should not be the only issue presented in Section 4.6 and on Table 4-8. There are outstanding issues related to the characterization of hydrogeologic units within Parcel C.</p> <p>Further characterization to demonstrate that 1) remedies within the A-aquifer will be remediated by the selected remedy and not recontaminated by COCs within the B-aquifer and/or F-WBZ and 2) unacceptable discharges to the Bay are not and will not occur should be added to the “Issues” for Parcel C. Additionally, successful</p>	<p>Please see response to Water Board’s Protectiveness Determination General Comment #2.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		implementation of the Deep F-WBZ Investigation for Remedial Unit-C4 (RU-C4) and the planned B-Aquifer investigation should be included in the "Follow-up Actions" for Parcel C.	
17	Section 5.4.1.1 Remedy Implementation	<p>page 5-7 text states that, "[T]he Parcel D-1 RAMP (ChaduxTt, 2011a) states that groundwater samples will be collected semiannually until at least two years after property redevelopment to ensure redevelopment activities do not mobilize metals that could migrate into the [B]ay."</p> <p>Specific Comment 17: Mobilization of metals should be considered due to potential groundwater rise, and monitoring should be reevaluated in this context for Parcel D-1. Groundwater monitoring for metals at Parcel D-1 should be continued beyond pending redevelopment and evaluated for continued monitoring due to groundwater rise.</p>	<p>Please see response to Water Board's Protectiveness Determination General Comment #5.</p> <p>Changes to monitoring components based on potential climate-related vulnerabilities will be considered during site-specific studies.</p>
18	Section 6.4.2.1 Remedy Implementation - Soil, Sediment, and Debris Excavation, Consolidation, and/or Removal	<p>page 6-13 text states, "[A]s part of the Phase 2 RA, the tidal and freshwater wetland areas were excavated and graded to the subgrade design as specified in the DBR [Design Basis Report] (ERRG, 2014)."</p> <p>Specific Comment 18: The full magnitude and extent of crystalline lead oxide and soil contaminated with lead above the hot spot cleanup goal must be addressed with further soil and groundwater sampling. The "white crystalline lead oxide particles" were neither delineated nor removed during construction of the freshwater wetland where it may intersect the Experimental Ship Shielding Range. The description of "crystalline lead oxide particles" encountered during freshwater wetland excavation was removed from the Final Phase II Remedial Action Construction Summary Report; however, that information remains relevant because the vertical extent of lead has not been characterized. The left-in-place lead contamination above the hot spot cleanup goal poses risks to wildlife and may cause lead discharges to the freshwater wetland or the Bay.</p>	<p>Please see response to Water Board's Protectiveness Determination General Comment #3.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.</p>	
19	Section 6.4.2.1, Table 6-5, Appendix C	<p>summarizes the remedy implementation, expected outcomes, and provides the site inspection details and photos for Parcel E-2.</p> <p>Specific Comment 19: Failure to implement portions of the remedy demonstrates that RAOs for ecological receptors have not been met in the short-term and deferred protectiveness is appropriate for Parcel E-2.</p> <p>In accordance with the 2018 RAWP, the Navy committed to installing a turbidity curtain to prevent potential discharges of sediment into the Bay for activities conducted within 250 feet of the shoreline as detailed in Section 11.3, Erosion and Sediment Control Measures, and Appendix E, CERCLA Stormwater Plan (SWP) Section 3.3.1, Non-Stormwater Controls. RAWP construction activities within the tidal influence zone included 1) placement, grading, and compaction of final soil cover and 2) installation of drainage piping features at the freshwater wetlands and near the shoreline retaining wall.</p> <p>A turbidity curtain was not deployed and evidence shows heavily disturbed soils throughout the shoreline area during the rainy season (see Appendix C, Site Inspection and Photograph Logs, Pages C-119 to C-126 – Site inspection photographs). Visibly turbid standing water along the shoreline revetment indicates a discharge of sediments to the Bay.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.</p>	Please see response to Water Board's Protectiveness Determination General Comment #3.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
20	Section 6.4.2.1 and Table 6-5.	<p>The text and table provide details regarding the Upland Slurry Wall including RAOs and performance metrics.</p> <p>Specific Comment 20: Per Regulatory Agencies' comments, water level and analytical data to demonstrate the Upland Slurry Wall is functioning as designed, as well as engineer certified as-built designs for the Upland Slurry Wall, as modified, need to be provided.</p> <p>The Upland Slurry Wall was not constructed in accordance with the final design and specifications. The unplanned 220-feet long by 10-foot deep gap in the Upland Slurry Wall may result in unintended consequences to the groundwater flow system and thus unacceptable discharges to the freshwater wetlands and the Bay. The Navy has allowed several years of time lapse without adequately showing that unacceptable discharges of leachate generated from groundwater contact with the landfill waste are being mitigated by collecting and analyzing groundwater data from the existing monitoring wells as requested by the Regulatory Agencies. See Protectiveness Determination Comment 3 for additional details.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board's concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.</p>	Please see response to Water Board's Protectiveness Determination General Comment #3.
21	Section 6.6 Issues, Recommendations, and Follow-up Actions	<p>provides a summary of issues, recommendations, and follow-up actions for Parcel UC-3.</p> <p>Specific Comment 21: Issues, recommendations, and follow-up actions should not be limited to Parcel UC-3 as there are outstanding issues for Parcel E-2 as documented in Regulatory Agencies' correspondence. See Protectiveness Determination Comment 3 above for additional details.</p> <p>The following should be added to "Issues" in Section 6.6: turbidity curtain not deployed during construction, stormwater best</p>	Please see response to Water Board's Protectiveness Determination General Comment #3.

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>management practices/records keeping, Upland Slurry Wall not implemented as designed, as-built designs for changes to the Upland Slurry Wall not provided, methane mitigation and monitoring within the landfill, potential lead contamination in the wetlands, potential impacts to soil due to RCRA hazardous waste handling.</p> <p>The following “Recommendations and Follow-up Actions” should be added to Table 6-11: obtain as-built design drawings for the Upland Slurry Wall signed and stamped by a registered professional civil engineer in California, monitor water levels and collect analytical data to demonstrate the Upland Slurry Wall is functioning as designed, collect soil samples in the vicinity of RCRA hazardous waste piles, collect soil/groundwater samples within the wetland to demonstrate that lead has been adequately remediated, revise compliance monitoring and mitigation plan for methane at the landfill, and provide full records for stormwater best management practices for the duration of the implementation phases for the remedy at Parcel E-2.</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 18, 19, 20, and 21: The responses do not adequately address Regional Water Board’s concerns, refer to our evaluation of Response to Protectiveness Determination Comment 3 (General) above.</p>	
22	Appendix A, Section 1.0 Introduction	<p>The Navy used the Department of Defense Regional Sea Level (DRSL, 2015) database to evaluate climate-related hazards, the most important of which is coastal flooding due to the site’s proximity to the Bay. The DRSL considers scenarios for the years 2035, 2065, and 2100 and accounts for site specific adjustments, including vertical land movement.</p> <p>Specific Comment 22a: Of the two timeframes evaluated (2035 and 2065), vertical land movement was only considered for the 2065 scenario. Explain why the Navy doesn’t evaluate vertical land movement in the 2035 scenario.</p>	<p>Response to 22a. DRSL (2015) considers vertical land movement (VLM) in its sea level rise projections for both 2035 and 2065, as estimated through local tide gauges and continuous GPS stations. However, at those installations like HPNS, where the projected VLM in 2035 is less than the estimated error in these measurements of 0.05 m (0.15 ft), VLM is assumed to be zero. Even if this low local VLM projection were to be included, it would not appreciably change the sea level rise projection by 2035 at HPNS. The following change was made to Appendix A Section 2.1:</p> <p>For HPNS, the highest GHG emissions and resulting SLR projections of 1.0 foot and 3.2 feet for the years 2035 and 2065, respectively (Table 2-1), are the most</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>Specific Comment 22b: Why isn't the 2100 scenario considered in this CRA?</p> <p>Specific Comment 22c: Justify the use of guidance dated 2015 when more current and site-specific guidance and sea level rise projections are available, such as the Ocean Protection Council (OPC) State of California Sea Level Rise Guidance (2018) and OPC Sea-Level Rise Action Plan (2022).</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 22c: Please clarify whether there is an associated date or timeline for this updated DRSL guidance.</p>	<p>conservative projections in DRSL and were used as the upper limit of the range evaluated in this assessment. <u>DRSL (2015) does considers vertical land movement (VLM) in its sea level rise projections for both 2035 and 2065, as estimated through local tide gauges and continuous GPS stations. However, at those installations like HPNS, where the projected VLM in 2035 is less than the estimated error in these measurements of 0.05 m (0.15 ft), VLM is assumed to be zero. Even if this low local VLM projection were to be included, it would not appreciably change the sea level rise projection by 2035 at HPNS. The DRSL projections for 2065 take into account both SLR and land subsidence of 0.3 feet.</u></p> <p>Response to 22b. The following text was added to Section 2.1: <u>The Navy plans to include the 2100 scenario during site-specific studies.</u></p> <p>Response to 22c. The following text was added to Section 2.1: <u>DoD plans to update the DRSL guidance periodically, just as OPC is updating theirs. DoD uses DRSL projections for (1) Master Planning at installations for infrastructure protection and sustainability and (2) environmental protection planning. DoD is trying to maintain consistent maps for both. Simultaneously, the Navy is comparing DRSL projections with those from California OPC and verifying that the two projections are similar.</u></p> <p>In the case of Hunters Point, DRSL projections are similar to those of OPC (2018) and currently more conservative than those of the updated OPC (2024) projections. The DRSL projections are also consistent with DTSC's design goal of 3 ft of SLR by 2050.</p> <p>Response to Additional Comment:</p> <p>The DoD is reviewing the schedule for updating the projections used in the DRSL however, the completion date for updating the DRSL guidance is unknown.</p>
23	Appendix A, Section 2.1, Sea Level Rise Projections	This section references a 30-year timeframe for a phased approach to plan for sea level rise, per the DTSC Draft Sea Level Rise Guidance (2023). Sea level rise projections of 1 foot for the year 2035, and 3.2 feet for 2065 were selected as the most conservative levels based on the DRSL report and are generally consistent with projections made in	<p>Response to 23a. The following text was added to Section 2.1: <u>The screening level CRA was conducted to identify potential vulnerabilities to further assess in site-specific studies. DTSC's and other climate change assessment guidance was considered in this CRA and will be considered further in the recommended</u></p>

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>the OPC State of California Sea Level Rise Guidance which DTSC's Draft Guidance relies upon.</p> <p>Specific Comment 23a: While 30 years is referenced as a minimum planning timeframe for a phased approach, this document fails to mention that applies to a remedy that provides a minimum of 30 years of protection against sea level rise and that DTSC "prefers full action taken now to address future impacts, but will consider a phased adaptation approach on a case-by-case basis."</p> <p>Specific Comment 23b: The DTSC Draft Guidance states that "to ensure remedy resilience...evaluate projects based on sea level rise of 3.5 feet by 2050, and 6 feet by 2100," which are the recommended targets for minimum sea level rise planning and preparation, as presented in the OPC Sea-Level Rise Action Plan (2022).</p> <p>Additional Comment Received 6/4/2024</p> <p>Regional Water Board Response Specific Comment 23b: Note the OPC State of California Sea-Level Rise Action Plan (2022) lists 3.5 feet (ft) and 6 ft of sea level rise as target planning levels for resiliency by 2050 and 2100, respectively. Therefore, the DRSL projections should be benchmarked, or as close as possible, to the above Sea-Level Rise Action Plan criteria to factor in the need for a 2100 planning scenario, which is consistent with the current DTSC guidance.</p>	<p>site-specific studies that the regulatory agencies will have the opportunity to review and provide input on.</p> <p>Response to 23b. The following text was added to Section 2.1: <u>The screening level CRA was conducted to identify potential vulnerabilities to further assess in site-specific studies. DTSC's and OPC's climate change assessment guidance was considered in this CRA and will be considered further in the recommended site-specific studies. Recently, OPC lowered its SLR projections for future years, so that makes the DRSL projections even more conservative. OPC (2024) is now projecting 0.4-0.7 ft of SLR in 2030-2040 and 1.4-2.2 ft in 2060-2070, this making the Navy's projections even more conservative. The Navy's highest projection of 3.2 ft SLR by 2035 is also close to DTSC's climate resilience goal of 3.5 ft SLR by 2050 (DTSC, 2023). As per DTSC guidance, the Navy will ensure that remedies are protective for the next 30 years.</u></p> <p>Response to Additional Comment: Comment acknowledged and will be taken into account for the site-specific studies.</p>
24	Appendix A, Section 2.2 Seawater Inundation Impacts, Section 2.3 Storm Surges, Section 3.1 Groundwater Emergence, Figures 2-2, 2-3, 2-4, 2-5, 3-1,	<p>the text states that "[F]igures 2-2 and 2-3 show the potential for permanent seawater inundation in 2035 and 2065, for the highest SLR scenarios in DRSL. Except for some marginal seawater encroachment at the edges of some parcels, no permanent seawater inundation is projected in any of the parcels during 2035 and 2065, under the highest SLR scenario."</p> <p>Specific Comment 24: No details are provided regarding which specific remedies, remedy components, or COCs may be impacted by this inundation. These concerns apply to storm surges, transient inundation, and groundwater emergence. The text should be revised to include which specific remedies, remedy components, and/or</p>	Please see response to Water Board's Protectiveness Determination General Comment #5 and Water Board's Specific Comment #23a.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
	and 3-2	COCs will be impacted by permanent inundation, storm surges, or groundwater emergence. Additionally, figures should be revised to depict the locations of remedy and COC boundaries in relation to permanent inundation, storm surges, or groundwater emergence.	
25	Section 2.3 Storm Surges, Figure 2-4 and Figure 2-5	<p>The transient inundation is shown to be extensive by 2035 as stated in the text, “[P]ortions of IR 7/18, and Parcels B-1, B-2, C, D-1, E, and the low-lying areas of E-2 are projected to be impacted.”</p> <p>Specific Comment 25: Parcel specific evaluations should be initiated immediately due to concerns regarding transient inundation. Parcel D-1, Parcel E, and Parcel E-2 should be prioritized. Eleven years is a short time to assess existing remedies for resilience and implement changes if needed to prevent exposures. Additionally, this prediction may not be appropriately conservative, as similar inundation to that depicted in Figure 2-4 for Parcel E in 2035 was observed on January 23, 2024, as documented in the Regional Water Board’s email to the Navy sent on January 30, 2024.</p>	Please see response to Water Board’s Protectiveness Determination General Comment #5 and Water Board’s Specific Comment #23a.
26	Appendix A, Section 3.1 Groundwater Emergence	<p>The mean sea level (MSL) is used as the datum to determine permanent sea level rise induced groundwater table rise, as used by the City of Alameda (2022). A 1:1 ratio of groundwater table rise to MSL rise was considered, and the projected groundwater rise was added to the baseline.</p> <p>Specific Comment 26a: In the Seawater Inundation Impacts section, mean high higher water (MHHW) is the standard elevation used as a baseline, and is the standard used in SLR mapping tools. SLR is added to the MHHW for evaluation for potential upland inundation. The MHHW should be applied instead of MSL for SLR calculations.</p> <p>Specific Comment 26b: The reference to the City of Alameda report from 2022 uses data from a 2020 report on “The Response of the Shallow Groundwater and Contaminants to Sea Level Rise” for the City of Alameda. The authors of this report have published more recent, and more applicable data that should be applied to this CRA - “Shallow Groundwater Response to Sea-Level Rise (Alameda, Marin,</p>	<p>Response to 26a. The increase in sea level (projected by both DRSL and OPC) is the same, whether the increase is applied to MSL or MHHW. The Navy is using MHHW as the baseline for assessing areas of seawater flooding. Therefore, an area is considered as flooded when it becomes subject to daily high tides. When assessing groundwater table rise, the same increase in sea level is applied to the highest groundwater level experienced at Hunters Point in the last 20 years. For groundwater assessment, this is the equivalent of applying a projected increase in sea level to high tide (MHHW) for seawater assessment. This will be clarified in the revised CRA.</p> <p>Response to 26b. We shall reference the more recent study on shallow groundwater response in the revised CRA in Section 3.1. The recent reference follows a similar methodology of approximating groundwater table rise as equivalent to sea level rise, as in the 2020 study, but covers larger areas around San Francisco.</p> <p>Response to 26c. The Navy’s report does not use MSL as the baseline for mapping groundwater emergence. The CRA reviewed the past 20 years of</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
		<p>San Francisco, and San Mateo Counties).” The more recent report with county-specific data should be used.</p> <p>Specific Comment 26c: The above report does reference the MSL datum; however, this assessment fails to mention “the Bay water level elevation approximately <u>one foot above the mean tide line</u> was selected because fresh groundwater is usually found just above the mean tide line inland of coastal embayments.” The additional foot above MSL should be accounted for in these projections of groundwater emergence.</p> <p>Specific Comment 26d: The CRA should explain how tidal fluctuations were accounted for in evaluating groundwater emergence, when “tidal fluctuations were observed from 150 to 500 feet inland from the [B]ay” within the A-Aquifer in both Parcels C and D, as stated in sections 4.2.1.2 and 5.2.1.2.</p>	<p>groundwater elevation data in the BGMP to find the historical high groundwater table in monitoring wells and elevated it by the projected sea level rise for each time step (2035 or 2065). The Text in Appendix A Section 3.1 has been modified as follows:</p> <p>To determine permanent SLR-induced groundwater table rise, MSL was used as the datum. a 1:1 ratio of groundwater table rise to <u>MSL sea level</u> rise was used, and the projected groundwater rise was added to a baseline as described in the next paragraph.</p> <p>Response to 26d. The text in the CRA was expanded to clarify the approach for mapping groundwater emergence in Appendix A Section 2.2.</p>
27	Appendix A, Section 5.1 Assessment Methodology	<p>The vulnerability assessment evaluates whether impacts identified in the CRA indicate a new exposure, and whether site COCs (chlorinated volatile organic compounds [CVOCs], heavy metals, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons [PAHs]) are identified as most likely to persist through 2035 and 2065. Potential vulnerabilities to both human and ecological receptors to heavy metals were identified due to groundwater emergence.</p> <p>Specific Comment 27: Explain why the other COCs, i.e., CVOCs, PCBs, and PAHs, do not present a threat to human health and the environment as groundwater emerges.</p>	<p>Response. The following text was added to Section 5.1: <u>Heavy metals are likely to persist at current (or post-remedy) levels in 2035 and 2065 and are potentially soluble in seawater and groundwater. Therefore, their potential to be mobilized through dissolution is identified as a vulnerability. Residual CVOCs (after ongoing or planned source treatment and removal) are not expected to persist through 2065 and their attenuation will be monitored through the ongoing monitoring program. PAHs and PCBs are relatively insoluble and their mobilization potential is only through erosion of soil. As HPNS has ubiquitous land covers (asphalt or vegetated soil), erosion of soil containing residual PAHs and PCBs is not identified as a vulnerability.</u></p>
28	Appendix A, Section 5.3.1 Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater	<p>Where previous treatment of a CVOC source left behind residual mass, additional treatment is planned. By 2035 any residual CVOCs in groundwater are projected to attenuate below remedial goals.</p> <p>Specific Comment 28: This assumption should be reevaluated after additional treatment is performed, and well ahead of any projected groundwater emergence.</p>	<p>Please see response to Water Board’s Protectiveness Determination General Comment #5 and Water Board’s Specific Comment #27.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	Regional Water Board Comments Dated April 30, 2024	Navy Response
Protectiveness Determination Comments			
	Table Rise to 3 feet bgs, Page A-20		
29	Appendix A, Section 5.3.4 Potential New Exposure to Subsurface Remedy Infrastructure to Saltwater Intrusion, Page A- 21	<p>The groundwater at many locations is high in “saltwater components, such as chloride” indicating that saltwater intrusion is an ongoing phenomenon.</p> <p>Specific Comment 29: A geochemical evaluation should be performed to evaluate how the site COCs detected in soil and groundwater will be affected by increasing salinity.</p>	Please see response to Water Board’s Protectiveness Determination General Comment #5.
30	Appendix A, Section 5.3.6 Parcel E-2 Remedy Resiliency	<p>The Parcel E-2 landfill has design elements which will make the remedy resilient to sea level rise through 2065, including the addition of a 9-foot shoreline revetment and 3-foot sea wall. The planned construction of fresh and tidal wetlands is designed to store and transmit seawater, rain, and groundwater to mitigate sea level rise effects.</p> <p>Specific Comment 30: Consider the following in the remedy design and future monitoring and maintenance of the landfill: as groundwater becomes emergent, as it is projected in the CRA to do by 2035 with 1 foot of sea level rise, contaminated groundwater may enter the freshwater wetland impacting ecological receptors; the wetland may overflow its design footprint which can impact the nearby or surrounding protective landfill cap; and contaminated groundwater may overtop the downgradient slurry wall. Additionally, it is unclear how/why passive design elements alone are considered enough for resilience when active solutions such as hydraulic control may be needed to prevent migration of contaminants.</p>	Parcel E-2 has been identified as a vulnerability in the CRA and will be further evaluated during site-specific studies. As with all site-specific studies, the regulatory agencies will have the opportunity to review and provide input on the scope.

No.	Location	Additional Regional Water Board Comment Dated June 4, 2024	Navy Response
New Comment			
1	General	<p>There was an expectation that the redline RTC revisions would include all relevant revisions for the purpose of evaluating the Navy response to Regulatory Agencies' comments, e.g., revised text, tables, and figures; however, these details have been inconsistently provided or not included in the RTCs. The Regulatory Agencies have identified several issues, recommendations, and follow-up actions that are necessary to inform and/or demonstrate effectiveness of existing remedies or for remedies in the implementation phase. Specific milestones (i.e., primary documents), schedules, and timeframes should be specified and included in the Draft-Final Five-Year Review. Sections 3.6 (Parcel B-2), 4.6 (Parcel C), 5.6 (Parcel D), and 6.6 (Parcel E-2), as well as Tables 3-4, 4-8, 5-8, and 6-11 need to be updated to provide the specific details requested by the Regulatory Agencies.</p>	<p>The expectation after the May 15 and 16 meetings with the agencies was that the Navy would revise the draft RTCs by May 24, the agencies would respond back to Navy on which comments they can agree with, or which still need additional work and then the Navy will prepare the red line strike out document and provide by June 14, 2024, with comments due back for the agencies by July 15, 2024.</p> <p>Issues, Recommendations, and milestones were added to Tables 3-9 (Parcel B), and 4-8 (Parcel C). Note that for Parcel C interim milestones were provided for the F-WBZ study but that the B-Aquifer groundwater study has not been contracted and the Navy elects not to include these interim dates. A footnote has been added to the Five-Year Review Summary form and Table 4-8: <u>¹ The Parcel C B-aquifer study will also be conducted within the overall timeframe to meet the milestone date; however, because funding and contracts are not currently in place, the interim milestones are unavailable.</u> Concerns and milestones for Parcel E-2 were added to Other Findings section as the Navy's protectiveness determination is Will Be Protective.</p> <p>Milestones for the Basewide PFAS RI work plan, fieldwork, and report were added to the updated Other Findings summary in the Five-Year Review Summary Form and to respective Other Findings sections for each Parcel.</p> <p>Milestones for the CRA (scoping and prioritization meeting and initiation of the Parcel D-1 study) were added to the Other Findings section of the Five-Year Review Summary Table.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930	Responses By Navy		
Comment By Michael Howley	Code/Organization Site Mitigation and Restoration Program – Berkely Office, Department of Toxic Substances Control (DTSC)			Date April 2024	
Project Title and Location Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023				Type of Review	
				X	Draft
					Final
					Other

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
1	General	Throughout the document, references to the Fourth Five-Year Review Issues, Recommendations, and Follow-up Actions (e.g., Table 3-4) note that addenda were prepared to evaluate the Radiological Remediation Goals for soil and buildings. During the Fourth Five-Year Review, DTSC and CDPH deferred to the United States Environmental Protection Agency (USEPA) for resolution of comments on the Radiological Building Addendum. DTSC understands that the addendum may have been overcome by events and is no longer relevant as the Navy intends to demolish and dispose of the buildings in question, and that risk-based remediation goals would be moot. DTSC defers to USEPA for resolution of any outstanding issues related to the Fourth Five-Year Review Radiological Building Addendum.	The additional information about building demolition and Building Addendum applicability has been added to Section 1.4.3.1 as follows: ... Following the recommendation from the Fourth Five-Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs for soil and building structures, which concluded that the current RGs are protective for all future land users (Navy, 2020a, 2020b). There was Agency disagreement over the calculation methods for building RGs; however, the Navy is planning on demolishing all radiologically-impacted buildings at each Parcel in response to a letter from the City of San Francisco's Office of Community Investment and Infrastructure, dated February 3, 2022, requesting that, before transferring the remaining Navy-owned property at HPNS, the Navy must demolish all remaining buildings (both radiologically impacted and nonradiologically impacted) on that property except for five small structures on the National Historic Register (OCII, pers. comm., 2022). The demolition and disposal of radiologically-impacted buildings will be completed under CERCLA. Details for managing radiological building materials during demolition will be documented in work plans for regulatory agency review. Because this is not an issue affecting protectiveness but will require a post-ROD change to document the increased cost, Explanations of Significant Differences will be prepared for each Parcel, as appropriate. Radiological retesting is planned and/or

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>currently underway to verify that the <u>soil</u> RGs, which were determined to be protective and remain valid, have been met for each parcel that was identified in the Fourth Five-Year Review.</p> <p>Reference:</p> <p>Office of Community Investment and Infrastructure (OCII). 2022. Personal communication (letter) to Kimberly A. Ostrowski, Director, Naval Facilities Engineering Command, Base Realignment and Closure Program Management Office, West. <i>RE: Demolition of the Existing Non-Historic Buildings at the former Hunters Point Naval Shipyard in San Francisco, California.</i> February 3.</p>
2	Issues/ Recommendations	<p>The Five-Year Review Summary Form and individual parcel recommendations (e.g., Table 4-8 for Parcel C) do not reflect the conclusions and recommendations of the Climate Resiliency Assessment (CRA). The CRA states: “if a vulnerability is projected to result in a potentially new exposure scenario for either human or ecological receptors through 2065, then an IR site-specific study is recommended to evaluate the potential Comprehensive environmental Response, Compensation, and Liability Act (CERCLA) risk to human and ecological receptors to inform the next Five-Year Review.” The CRA then recommends such studies for Parcels IR 7/18, B-1, B-2, C, D-1, and E. Based on the results of the CRA, DTSC also believes this list should include Parcel E-2 (see comment 19 below). Each of these should be reflected in the Issues/Recommendations. The recommendations should include information on what is to be studied (see comments 12 and 13 below), what information or guidance may be relevant (see comment 11 below), and the anticipated completion date.</p> <p>Additional Comment Received 6/3/2024</p> <p><u>Per the Climate Resilience Assessment (CRA) in Appendix A, remedy resilience is likely to be impacted by sea level rise. More robust site-specific analyses are required based on results of this evaluation and therefore the Navy's RTCs propose a prioritization meeting in November 2024, with the first site-specific study, at Parcel D-1, beginning in 2025. DTSC requests a target month and year be specified for the first site-specific study scoping meeting, or that the Navy provide clarification in the RTCs that the proposed prioritization meeting includes planning for the details of the site-specific studies with the regulatory agencies. Per DTSC’s 2023 Sea Level Rise Guidance, an adaptation plan is</u></p>	<p><i>General Response Regarding the Climate Resilience Assessment</i></p> <p><i>Note that several changes were made to the CRA based on Agency, City of San Francisco and Public comments. Specific changes that address comments are provided in the responses below and additional changes can be reviewed in the Redline-Strike-out provided in the draft-final Five-Year Review.</i></p> <p>The Navy Framework for CRA (2024) recommends that climate impacts on protectiveness determinations can be better evaluated with detailed site-specific studies have been conducted to verify projected impacts and vulnerabilities identified in the screening level CRA. As plans for these site-specific studies are developed, the agencies will have the opportunity to provide input. A prioritization meeting with the Navy and Agencies is proposed for November 2024.</p> <p>The following text has been added to the Other Findings for respective parcels (3.6.1.2, 4.6.1.2, 5.6.1.2, 6.6.1.2):</p> <p><u>The CRA estimates that groundwater emergence may occur in [IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas] by the year 2065.</u></p> <p><u>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum.</u></p> <p><u>However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
		<p>required because potential effects of sea level rise were witnessed during the January 2024 site visit and the CRA confirms future sea level rise impacts for the site. In adaptation planning, the remedy or action should be evaluated to determine adaptive capacity to sea level rise. Please include in the text that the upcoming site-specific/prioritization meetings will include discussion of an adaptation plan or a similar document.</p>	<p>and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the potential for increased vapor intrusion is identified in other CERCLA documents, ARICs for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</p> <p>For Parcel E-2, the following text has been added:</p> <p><u>Although the Parcel E-2 remedy components such as the sea wall were designed for resilience through a 3-foot rise in sea level (similar to the 2065 scenario), a site-specific study is recommended to evaluate the longer-term scenarios such as 2100.</u></p> <p>The following text has been added to Other Findings for Parcel D-1:</p> <p><u>The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035. Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025.</u></p> <p>Response to Additional Comment:</p> <p>Text was added to the Other Findings section of the Five-Year Review summary form to discuss adaptation plan or similar document, if the site-specific studies show that CERCLA type human health or ecological risk attributable to climate change requires adaptative measures.</p>
3	Issues/ Recommendations	<p>Parcels B-1, B-2, C, D-1, E, E-2, and G should note in the respective Issues/Recommendations tables that the September 2023 <i>Final Site Inspection Report for the Basewide Investigation of Per- and Polyfluoroalkyl Substances (PFAS)</i> recommended further investigation for PFAS in soil and groundwater. The PFAS discussion sections of the Five-Year Review should reference the April 10, 2024, <i>USEPA Final PFAS National Primary Drinking Water Regulation</i>, and compare data collected in the Site Inspection Report to the USEPA</p>	<p>The incorporation and evaluation of PFAS in the HPNS FYR was conducted in accordance with Navy policy and guidance. The Navy Policy for Conducting Five Year Reviews (dated June 2011), under Section 5.5 Five Year Review Technical Assessment, Item (d)ii, states, “Emerging contaminants which have not been previously investigated will only be assessed if (1) the contaminant is known or suspected due to site history, (2) peer reviewed toxicity criteria that can be used for</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
		<p>Regional Screening Levels (RSLs) and Maximum Contaminant Levels (MCLs) as applicable. While institutional controls may render the site short-term protective for human health risk, parcels with identified ecological receptors should be evaluated for deferred protection.</p>	<p><i>risk assessment have been published, and (3) the contaminant may call into question the protectiveness of either the remedy or the RAOs.”</i></p> <p>Current Navy Guidance states that an emerging contaminant (EC) should only affect a protectiveness determination if the EC is present at a concentration posing a potential unacceptable risk at the site AND the existing remedy does not address the current or future exposure to the emerging contaminant.</p> <p>As the PFAS remedial investigation (RI) has not been initiated to confirm whether there is unacceptable CERCLA risk to human and/or ecological receptors from PFAS at HPNS, it is not appropriate yet to evaluate if the existing remedy remains protective. Once the RI human health and ecological risk assessment is completed, the Navy will evaluate any identified PFAS CERCLA risk in the context of the existing site remedies.</p> <p>For a Protectiveness Deferred determination, Navy guidance is that the teams should determine if there is sufficient information to conclude that all human and ecological risks are currently under control and no unacceptable exposures are occurring. The Draft Five-Year Review presents lines of evidence supporting that any potential exposure pathways to PFAS contaminants likely do not pose an imminent risk based on the current remedies in place including ICs for soil and groundwater that are in place throughout all parcels. These lines of evidence are summarized below:</p> <ul style="list-style-type: none"> • As presented in Section 1.3.4.3, groundwater within the A-aquifer (and portions of the B-aquifer within Parcel C) is unsuitable for drinking water. Additionally, the City and County of San Francisco prohibits installation of domestic wells within city and county limits. • For soil, the Navy maintains durable covers and implements ICs to restrict human and terrestrial ecological receptor exposure to soil throughout all parcels at HPNS.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>The following text has been added to Section 1.4.1: <u>Regarding the potential pathway of groundwater discharge to surface water and exposure to aquatic receptors in the bay, the Navy's CERCLA PFAS SI data and existing site remedies were evaluated by the Navy.</u> <u>The following information and data support there is likely no imminent CERCLA risk:</u></p> <ul style="list-style-type: none"> • <u>The highest PFAS concentrations were detected in wells in Parcel E-2 (including PFOA at 18 µg/L). This specific location is upgradient to the nearshore slurry wall and the slurry wall is designed to inhibit migration of COCs in groundwater to the bay. The cement-bentonite mixture is expected to inhibit PFAS based on how they inhibit VOCs.</u> • <u>The PFAS detections in other identified near shore perimeter groundwater wells across HPNS were 1 to 2 orders of magnitude lower than the highest concentration at Parcel E-2, the PFAS SI results at these wells ranged from 0.14 µg/L to a maximum concentration of 3.2 µg/L (PFOS).</u> • <u>Published ecological screening values for aquatic receptors (Argonne, 2021) are:</u> <ul style="list-style-type: none"> - <u>PFOS: 0.117 to 22.6 µg/L</u> - <u>PFOA: 6.12 to 1,580 µg/L</u> <p><u>In summary, based on the above lines of evidence, there is no known imminent risk from PFAS to human or ecological receptors at HPNS.</u></p> <p>In addition, parcel-specific discussions as Other Findings in Sections 3 through 6 present individual areas that were identified for further investigation under the SI, based on historical site use or data collected during previous investigations.</p> <p>Reference:</p> <p>Argonne National Laboratory (Argonne). 2021. Derivation of PFAS Ecological Screening Values. Environmental Science Division, Argonne National Laboratory. Completed under interagency agreement between the U.S. Department of Energy (DOE), Argonne National Laboratory (Argonne), and</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>AFCEC. Final. September. https://www.denix.osd.mil/dodepa/denix-files/sites/85/2022/10/Final-PFAS-ESV-Report_Sept-2021_508.pdf</p> <p>The Navy has been preparing to implement the final rule within our cleanup program based on forthcoming Department of Defense (DoD) guidance. The Navy is committed to fulfilling PFAS cleanup responsibilities and will take necessary actions to implement the rule in accordance with CERCLA. As we move into the RI/FS phase for PFAS, CERCLA ARARs will be established including assessment of the Safe Drinking Water Act (SDWA). It is noted again, that the groundwater at HPNS is not suitable for use as drinking water and existing IC's prohibit the use as drinking water.</p> <p><u>Additional Response based on Water Board New Comment #1. Included in this Comment Response for completeness:</u></p> <p>Figures from the SI for each Parcel have been added as Appendix G and referenced in respective Other Findings sections.</p> <p>The following text was also added to the Other Findings section of the Five-Year Review Summary Form:</p> <p><u>Per- and Polyfluoroalkyl Substances</u></p> <p><u>The Navy is in the process of investigating per- and polyfluoroalkyl substances (PFAS) from historical use of PFAS-containing materials. Potential exposure pathways are under control through existing remedy components (institutional controls and durable covers) and data indicate that there is likely no imminent CERCLA risk while PFAS are investigated under the CERCLA process. The following areas are under investigation for PFAS:</u></p> <ul style="list-style-type: none"> • <u>Parcels B-1, B-2, C, D-1, G, E, and E-2: A-aquifer groundwater</u> • <u>Parcel B-1: IR-10 (Battery and Metal Plating Shop)</u> • <u>Parcel C: Building 215, Fire Station</u> • <u>Parcel D-1: Poseidon Area (Buildings 377, 384, 385, and 387), IR-69 (Bilge Water Pump House), and IR-70 (Former drum and tank storage area)</u> • <u>Parcel G: IR-09 (Pickling and Plating Yard)</u>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>Key PFAS investigation milestones include:</p> <ul style="list-style-type: none"> • <u>Final Basewide Remedial Investigation (RI) Work Plan – 4/30/2025</u> • <u>RI Fieldwork – Spring/Summer 2025</u> • <u>Final Basewide RI Report – 8/31/2026</u>
4	Issues/ Recommendations, Parcel E-2	<p>Although remedy construction at Parcel E-2 is ongoing, DTSC, the San Francisco Bay Regional Water Quality Control Board (Regional Water Board), and USEPA have raised concerns about multiple aspects of implementation that should be reflected here (see letters dated May 5, 2022, and December 8, 2022). The Five-Year Review should reflect Navy commitments to develop a Remedial Action Study Workplan to evaluate the integrity and performance of the upland slurry wall, as well as a commitment to revise the landfill gas monitoring plan to account for changes in monitoring well locations. In addition, the Navy should develop a work plan (primary document under the Federal Facilities Agreement) to evaluate groundwater and surface water near the freshwater wetlands to demonstrate that lead compounds are not leaching to the San Francisco Bay while the remainder of the remedy is constructed or that new contamination was not introduced from improperly managed stockpiles.</p>	<p>Because the Remedy at Parcel E-2 is currently under construction the Navy's protectiveness determination is "Will be Protective". The construction has prioritized components to address potential migration to the Bay first with the following components completed:</p> <ul style="list-style-type: none"> • Hot spot removal, Nearshore slurry wall, Shoreline revetment • Soil excavation to create freshwater and tidal wetlands • Radiological characterization, installation of foundation soil layer in preparation of Phase III landfill cover installation • Final cover installation <p>Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5 and in the Five-Year Review Summary Table under Other Findings) to document the Navy's commitment to continue to construct the remedy as well as analyze currently available data in a timely manner on a schedule agreed to among the FFA parties for the remedy components that are in place. As discussed at the April 24, 2024 meeting, the specific minimum information and analysis needs of the FFA Regulatory Parties, including a detailed status of all wells, are forthcoming in a tri-agency letter, after which the FFA parties will meet to discuss specific tasks and schedules. As discussed informally and in EPA's comments, the Navy recognizes that EPA expects the Navy will immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p><u>6.6.1.5 Parcel E-2 Other Findings</u></p> <p>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (for example, Nearshore Slurry Wall and landfill cover). The following is a summary of the remaining RA work, interim studies, and key milestones planned prior to completing the RACR:</p> <ul style="list-style-type: none"> • <u>Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018):</u> <ul style="list-style-type: none"> - <u>Landfill Gas System (Phase IVa) anticipated in 11/30/2025.</u> - <u>Wetlands (Phase IVb) anticipated in 11/30/2027.</u> • <u>Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as a new compliance point by revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024.</u> • <u>Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated by 11/30/2024.</u> • <u>Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 8/31/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction Remedial Action Performance Report is anticipated by 12/31/2024.</u> <p>Water Board specific concerns and responses were added to the technical assessment for Parcel E-2 (Section 6.5.1, page 6-20 and 6-21) as follows:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>While the remedy is currently under construction, Agency concerns have been raised regarding the completed components:</p> <ul style="list-style-type: none"> <p>Concern: The Upland Slurry Wall was not installed as designed. <u>Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a “hanging wall” (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was determined to be bedrock which has a lower permeability than the surrounding aquifer material. The draft final work plan to evaluate the Upland Slurry Wall performance is currently under way and work is anticipated to begin in 2025.</u></p> <p>Concern: The turbidity curtain was not used during remedy construction. <u>A 2,000-foot US Department of Transportation Type III offshore turbidity curtain was installed during shoreline work in accordance with the Design (ERRG, 2014) on November 30, 2016 as documented in the Phase II Remedial Action Construction Summary Report (Aptim, 2021). The turbidity curtain was removed after shoreline activities were completed, in accordance with the RAWP Appendix D, Environmental Protection Plan (CB&I, 2016) which states “During shoreline earthwork (revetment installation, wetlands excavation, and site grading), a turbidity curtain will be deployed as the BMP for sediment control.” Upcoming nearshore work, such as wetland installation, will be conducted in accordance with the design and RAWP.</u></p> <p>Concern: The Navy has not provided all stormwater best practices documentation. <u>Navy provided the following final primary documents that contain stormwater best practices: Remedial Action Work Plans (RAWPs) (CB&I, 2016; KEMRON, 2018); Stormwater Protection Plan; and stormwater best practices monitoring documentation during construction (provided in the Phase I RACR [Gilbane, 2018a] and Phase II RACSR [APTIM, 2021],</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p><u>which will also be provided in the forthcoming Phase III RACSR [pending]]. The Navy also responded to the Water Board's December 3, 2022, and January 11, 2023, and May 23, 2023 follow-up e-mail requests for stormwater records.</u></p> <ul style="list-style-type: none"> <p><u>Concern: There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future.</u> Lead was removed from the tidal wetland areas according to the Phase II RAWP (KEMRON, 2018) and subsequent Fieldwork Variance #5 (Appendix G of APTIM, 2021). Exceedances shown on Figures 6 and 7 of the RACSR (APTIM, 2021) were initial samples prior to over-excavation to remove lead-impacted soils. Post-over-excavation samples were found to be below the RG. Additionally, the landfill cap geomembrane and geosynthetic clay liner layers prevent vertical infiltration of rainfall from reaching the underlying landfill waste and promoting leachate. The geocomposite drainage layer carries any flow that infiltrates through the vegetative layer to the perimeter ditches. The surface water from the eastern half of the site will be collected by the eastern perimeter ditch and will drain directly into the Bay through the culvert pipe at the southeast corner of the site. The surface water from the western half of the site will be collected by the western perimeter ditch and will flow into the freshwater wetlands with excess runoff draining through the freshwater wetlands outfall pipe into the Bay. The chemically contaminated soils near the freshwater wetlands were removed during previous hot spot excavations and excavations during Phase II subgrade preparations, with confirmation testing to show that they are below action limits in the Final RACSR for copper, lead, total PCBs, and total TPHs. There is no required tie into the underlying Bay Mud at the Wetlands Boundary. Refer to Detail 4 on Design Drawing C18 from the DBR for the cover termination at the wetlands boundaries.</p> <p><u>Concern: There may be impacts to soil due to RCRA hazardous waste handling in stockpiles during remedy installation:</u> Navy is planning, at agencies' request, to sample the soil under former</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p><u>Parcel E-2 stockpile locations now covered with radiological retesting radiological screening yard pads for metals to confirm that the stockpiles didn't impact the soils around them during storm events. This will be completed after the pads are removed.</u></p> <p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15.</p> <p>CB&I Federal Services, LLC. (CB&I). 2016. Work Plan Shoreline Revetment; Site Grading and Consolidation of Excavated Soil, Sediment, and Debris; and Upland Slurry Wall Installation Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. October 12.</p> <p>KEMRON Environmental Services (KEMRON). 2018. Remedial Action Work Plan, Final Cove, Wetlands, and Landfill Gas Control and Containment System, Remedial Action Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. December 26.</p> <p>Gilbane. 2018. Remedial Action Completion Report, Hot Spot Delineation and Excavation and Nearshore Slurry Wall Installation, Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. June.</p> <p>APTIM. 2021. Remedial Action Construction Summary Report, Parcel E-2 (Phase II), Hunters Point Naval Shipyard, CA. April 6</p> <p><i>Note that revisions in the response above were made in blue font based on EPA's Additional Response received 6/5/2024 (See EPA Comment #3).</i></p>
5	Protectiveness Statements, Parcel B-2:	<p>As stated in letters from DTSC, the Regional Water Board, and the USEPA dated August 20, 2021, and November 23, 2021, the agencies believe that the <i>in situ</i> stabilization remedy at IR-26 has failed to prevent mercury discharge to San Francisco Bay. Based on the information in the record, DTSC believes the remedy for Parcel B-2 should be deemed Not Protective. However, in a meeting with the regulatory agencies on April 25, 2024, the Navy presented evidence that exceedances of mercury thresholds in groundwater wells may not necessarily indicate exceedances at the Bay water point of compliance. The Navy acknowledged that data gaps remain and that protectiveness should</p>	<p>From the Navy's perspective, there are multiple lines of evidence presented in the Five-Year Review suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in the April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to "Protectiveness Deferred" determination. The Protectiveness Statement has been changed to:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
		<p>be deferred until additional investigation can be conducted. These data presented by the Navy on April 25, 2024, should be included in the assessment of Parcel B-2. This includes a comparison of parametric measurements of groundwater and surface water, an explanation of the data source of the mercury trigger level, and an explanation of any attenuation factor assumptions used in the analysis. The Issues/Recommendations tables should be updated to document the exceedances and data gaps, describe how the Navy intends to address them, and set an expected timeline for resolution of the data gaps and additional remedy implementation. If these revisions are made as described, DTSC would concur with a designation of Protectiveness Deferred.</p>	<p><u>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions needs to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A primary document presenting the path forward will be finalized as soon as practicable but no later than October 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</u></p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows:</p> <p><u>After completion of the 3-year post-ISS treatment performance monitoring, the FFA regulatory agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that “mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan.” (EPA, DTSC, and Regional Water Board, 2021).</u></p> <p><u>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to “optimize” ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</p> <ul style="list-style-type: none"> • <u>Completion of source removal in 2008 via a time-critical removal action (Insight, 2009)</u> • <u>Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 performance monitoring locations to 2 performance monitoring locations and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-7. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL.</u> • <u>The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.</u> • <u>Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.</u> <p><u>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation are necessary to determine whether the remedy is protective of the Bay.</u></p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>3.5.1.3 Parcel B-2</p> <p>Yes. The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L. Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, <u>data demonstrating that mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L are lacking.</u> The RAO is stated as follows:</p> <p>... [no change from existing text]</p> <p>Protectiveness is not affected based on the following rationale: Data at the groundwater-surface water interface has not been collected; <u>however, from the Navy's perspective, it is not expected that mercury exceeds 0.6 µg/L based on the following rationale:</u></p> <ul style="list-style-type: none"> • <u>Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009).</u> • Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. • The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). • The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996).

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>Furthermore, mixing studies conducted by State of Washington, Department of Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023).</p> <ul style="list-style-type: none"> • <u>The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-7).</u> • <u>Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in sentinel wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4).</u> <p>Review of annual O&M inspections, historical documents... [no change from original text].</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 3-9 (Parcel B Issues, Recommendations, and Follow-up Actions):</p> <p><u>Issue: There is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater</u></p> <p><u>Recommendation: Evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or remedial alternatives/treatment that have been screened for further evaluation. Prepare a primary document presenting the path forward.</u></p> <p><u>Milestone Date: 10/31/2025</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p> <p><i>Note that revisions in the response above were made in blue font based on EPA's additional response (See EPA Comment #1). The date of July 31, 2025 was identified for the milestone date during the April 2024 meeting. It was determined after this meeting that since this is an FY25 project award, it would be affected by the financial brownout.</i></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			NAVFAC's financial system is being changed which not allow the award of FY25 projects to start until after December 31, 2024. Due to this uncontrollable issue, the Navy will require a date change to October 31, 2025. This date change is shorter than the duration of the brownout.
6	Protectiveness Statements, Parcel C:	<p>DTSC believes Parcel C should be deemed Protectiveness Deferred until certain planned investigations can be completed. While remedy implementation is ongoing to address contamination in the A-Aquifer, the Navy has planned investigations of the B-Aquifer and Fractured Water-Bearing Zone and their potential communication with the A-Aquifer and the San Francisco Bay. The need for these investigations, along with vulnerabilities identified in the CRA, represent data gaps that must be addressed before the remedy can be deemed protective. In a meeting with regulatory agencies on April 25, 2024, the Navy agreed to a statement of Protectiveness Deferred for Parcel C and agreed to include these investigations in the Issues/Recommendations.</p> <p>Additional Comment Received 6/3/2024:</p> <p>The revised Parcel C Protectiveness Statement notes that investigation of the B-Aquifer and Fractured Water-Bearing Zone (F-WBZ) "will take approximately 5 years to complete." This statement should also note that the F-WBZ investigation work plan has already been reviewed by the regulatory agencies and further describe the anticipated milestones for field work, data collection, and reporting within that total five-year period.</p>	<p>Navy acknowledges that while, from the Navy's perspective, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to "Protectiveness Deferred" until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ investigation for RU-C4 and the B-Aquifer and Upper F-WBZ investigation for RU-C2.</p> <p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the investigations currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area to address these data needs as follows:</p> <p>Yes. <u>The following information has come to light that could question the protectiveness of the remedy:</u></p> <ul style="list-style-type: none"> <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-aquifer and Upper F-WBZ in RU-C2 are required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u> <p>The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>A- and B-aquifers and whether discharge of chemicals present in the B-aquifer present potential unacceptable risks to Bay receptors. In order to make a protectiveness determination, the following action, <u>at a minimum</u>, needs to be made: complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, <u>as appropriate</u>, to assess potential impacts to Bay receptors. For the Deep F-WBZ, <u>a draft-final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans. Depending on the results of the data analyses, the development of conceptual site models, and necessary steps, these actions could possibly be completed within the next 5 years, at which time, as appropriate, a protectiveness determination will be made.</u></p> <p>Response to Additional Comment:</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 4-8 (Parcel C Issues, Recommendations, and Follow-up Actions) which includes the requested interim milestones:</p> <p>Issue: <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u></p> <p>Recommendation: <u>Complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria to assess potential impacts to Bay receptors. Where warranted, additional actions or changes to the remedy will be recommended at the conclusion of these investigations.</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p><u>Milestone Date: 7/31/2029</u></p> <p><u>Interim Milestones: Completion of F-WBZ investigation fieldwork 11/30/2025, completion of the F-WBZ investigation report 11/30/2026¹</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p> <p><u>Footnote:</u></p> <p><u>¹ The Parcel C B-aquifer study will also be conducted within the overall timeframe to meet the milestone date; however, because funding and contracts are not currently in place, the interim milestones are unavailable.</u></p> <p>Note that additional revisions in the response above were made in blue font based on EPA's additional response (See EPA Comment #2).</p>
7	General	The history of some Installation Restoration (IR) sites are not mentioned. For example, IR-A in Parcel B-1 was listed in Section 3.1 as an IR located in Former Parcel B but was no longer mentioned in the following description of the site in Section 3.1 or subsequent report sections. Please edit the Five-Year Review to include the history of all IRs. For each Parcel Letter, DTSC recommends creating an additional table listing the IRs and their history and status.	An IR Site summary table has been added to Section 1.2 where the IR sites are introduced and shown on Figure 1-2.
8	Section 6.4.1.1, Nonaqueous Phase Liquid Removal and Treatment	The text states, "ISS treatment will be initiated in winter 2023". Please revise the text to state when this in situ stabilization (ISS) treatment began or revise the anticipated initiation date.	This date has been revised to: ISS treatment will be initiated in <u>August 2024</u> .
9	Section 6.4.2.1, Durable Cover Installation & Landfill Gas Controls and Monitoring	This section states that the Phase 3 [Remedial Action (RA)] is "anticipated to be completed in summer 2023." Please revise the text to state if the Phase 3 RA was completed or revise the anticipated completion date. Please also update the subsequent paragraph, which describes construction planned "prior to spring 2024."	<p>The text in Section 6.4.1.1 (Parcel E) has been revised as follows:</p> <p>Nonaqueous Phase Liquid Removal and Treatment</p> <p>A cement-bentonite slurry wall will be constructed at IR-03 and the surrounding area (Figure 6-3). Construction is planned for <u>December 2024</u>. prior to spring 2024.</p> <p>The text in Section 6.4.2.1 (Parcel E-2) has been revised as follows:</p> <p>Soil, Sediment, and Debris Excavation, Consolidation, and/or Removal</p> <p>During the Phase 3 RA, the contractor will build approximately 3.18 acres of tidal wetlands and approximately 1.59 acres of freshwater</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>wetlands in the Panhandle Area in accordance with the DBR (ERRG, 2014; KEMRON, 2018). <u>The tidal and freshwater wetland installations are anticipated to be completed in 2027.</u></p> <p>Durable Cover Installation</p> <p>Durable covers at Parcel E-2 were will be constructed under the Phase 3 RA, <u>completed in fall 2023. anticipated to be complete in summer 2023</u></p> <p>Landfill Gas Controls and Monitoring</p> <p>During the Phase 3 RA, a new gas control and collection system (GCCS) will be installed, anticipated in <u>2024/2025summer-2023</u>, consisting of active LFG extraction wells, ...</p>
10	Section 6.4.2, Landfill Gas Monitoring	This section describes recent detections of excess methane at a monitoring well and notes that readings continue to remain elevated to date. This section should be updated to reflect recent developments, including methane extraction, reduction of methane exceedances below action levels, and the installation of a confirmation well outside of the landfill boundary.	<p>This section has been revised to summarize additional work related to methane extraction, reduction, and delineation and a technical memorandum will also be included as an appendix to this Five-Year Review. The following text was added to Section 6.4.2.2 under Landfill Gas Monitoring:</p> <p>On June 21, 2023, the Navy detected a methane gas reading above the State of California action level at an HPNS landfill gas monitoring probe (GMP-07). <u>The probe is located inside the newly installed landfill cover and is no longer representative of a perimeter monitoring point. In order to confirm that the methane levels are below action levels at a boundary location, a new monitoring probe was installed on October 13, 2023 (GMP-54). Measurements were collected in October through December with no detections of methane with the exception of a reading of 0.1 percent on October 31, below the action level of 5 percent by volume. Details and data are provided in Appendix H.</u></p> <p>landfill perimeter. It is approximately 200 feet southeast of the UCSF compound, which borders the Parcel E-2 boundary.</p>
11	Appendix A, general comment	Elements of the CRA are not consistent with DTSC's 2023 draft Sea Level Rise (SLR) Guidance. Most significantly, DTSC's guidance calls for evaluating resiliency to 3 feet of SLR by 2050 and 6 feet by 2100. The CRA also does not evaluate king tide events or the interaction between sea level rise, groundwater rise, king tides, and/or storm events. Even so, this screening-level assessment recommends site-specific investigations. DTSC concurs with	The CRA uses SLR projections made in the DoD Regional Sea Level (DRSL) data base (Highest and Lowest greenhouse gas emissions scenarios). The Highest scenario is conservative and consistent with projections made by OPC (2018) for similar time steps, especially when accounting for the slight offset in timesteps (1 ft of SLR in Navy's DRSL for 2035 versus 0.8-1.3 ft in OPC for 2030-2040; 3.2 ft of SLR in Navy's

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
		<p>these recommendations and strongly urges the Navy to use DTSC's SLR guidance in these additional studies.</p> <p>Additional Comment Received 6/3/2024:</p> <p>DTSC appreciates the commitment to assessing sea-level rise impacts in the year 2100 in the site-specific assessments, consistent with DTSC's 2023 Sea-Level Rise Guidance. Please include in the Issues/Recommendations section, the Other Findings section, and the CRA that the Navy plans to evaluate the Year 2100 impacts as a next step in conjunction with the site-specific studies for all parcels. Please edit the RTC to indicate that such wording was added to the text and in which section. Include reference that the Year 2100 evaluation is consistent with the DTSC 2023 Sea Level Rise Guidance and the Ocean Protection Council's 2022 State Agency Sea-Level Rise Action Plan for California.</p>	<p>DRSL for 2065 versus 2.6-3.5 ft in OPC 2060-2070). Since then, OPC has lowered its projections for these years, so that makes the DRSL projections even more conservative. OPC (2024) is now projecting 0.4-0.7 ft of SLR in 2030-2040 and 1.4-2.2 ft in 2060-2070, this making the Navy's projections even more conservative. The Navy's highest projection of 3.2 ft SLR by 2065 is also close to DTSC's climate resilience guidance of 3.5 ft SLR by 2050. The Navy plans to evaluate the Year 2100 as a next step, in conjunction with site-specific studies.</p> <p>Response to Additional Comment:</p> <p>See response to Comment 2. Additional text, including the 2100 timeframe was added to the Five-Year Review Summary Form under Other Findings, Other findings for each Parcel. The following text was added to Section 6.1 of Appendix A:</p> <p><u>The Navy Framework for CRA (2024) recommends that climate impacts on protectiveness determinations can be better evaluated after detailed site-specific studies have been conducted to verify projected impacts and vulnerabilities identified in the screening level CRA. The CRA is a screening level assessment to identify potential vulnerabilities that can be further assessed in site-specific studies at HPNS. These site-specific studies and prioritization of parcels will be discussed with the agencies. Protectiveness statements in a Five-Year Review will be affected when site-specific studies show that an exposure pathway has the potential to be complete and a future unacceptable health or risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). The Navy will assess Year 2100 projections in conjunction with site-specific studies.</u></p> <p><u>The CRA estimates that groundwater emergence may occur in several parcels by the year 2065. These mapping projections will be verified during site-specific studies. However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and</u></p>

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<u>evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors).</u>
12	Appendix A, general comment	<p>During a public meeting and presentation on April 22, 2024, Navy staff (Arun Gavaskar, NAVFAC EXWC), discussing the evaluation of groundwater rise, noted to DTSC that the Navy had taken surface water conductivity measurements following storm events to assess potential communication between surface water and groundwater. These data and any other data collected for the CRA should be included and discussed for their use in the recommended site-specific follow-up studies.</p> <p>Additional Comment Received 6/3/2024:</p> <p>The comment response describes field measurements taken for surface water conductivity during the CRA to screen ponded surface water following storm events for similar characteristics to groundwater or Bay water. Please provide additional details on the locations of these conductivity measurements (i.e., in which topographic trough), the units for readings recorded (i.e., in milliSiemens per meter), and the title and date of the deliverables reporting those data. If the Navy does not intend to report the data, please explain why not and describe how similar data collection efforts may be incorporated into the site-specific sea-level rise assessments.</p>	<p>After a storm event in March 2023, the Navy noted four locations of standing water. Conductivity of the standing water was measured to differentiate between rainwater and seawater. Conductivity in three of the locations in Parcels C, D-1, and E was low, indicating that the water was likely rainwater ponding in topographic troughs. A fourth ponding location in Parcel E, closer to the shoreline, showed relatively elevated conductivity. These locations will be further evaluated during site-specific studies.</p> <p>Response to Additional Comment:</p> <p>The following text was added to Section 4.0 of Appendix A:</p> <p><u>After a storm event in March 2023, the Navy noted four locations of standing water as follows: one in Parcel C, one in Parcel D-1, and two in Parcel E. As a preliminary trial, conductivity of the standing water was measured in an attempt to differentiate between rainwater and seawater, but no definitive determination could be made. Conductivity in three of the locations in Parcels C, D-1, and E was low, indicating that the water was likely rainwater ponding in troughs in asphaltic surfaces. The fourth ponding location in Parcel E, closer to the shoreline, showed elevated conductivity, but it was unclear if there was any seawater influence. Conductivity by itself may not be a good indicator of the source of flooding. These locations will be discussed more in the workplan for site-specific studies. The Parcel-specific O&M manuals discuss routine inspections and inspections following storms (intense rainfall events) as triggers for an additional inspection.</u></p>
13	Appendix A, general comment	<p>During the Five-Year Review Site Inspection on January 23, 2024, DTSC observed significant stormwater inundation in Parcel E. The submerged area was near the southern end of a bioswale, where 100-year storm events will cause transient inundation by 2035 (Figure 2-4) and groundwater is predicted to emerge by 2065 (Figure 3-2). Navy personnel (Doug Delong, CSO) noted that the bioswale floods routinely and appears to be tidally influenced. The CRA should recommend that follow-up studies evaluate the performance of</p>	<p>See response to DTSC Comment #12, the location within Parcel E is most likely a result of poor drainage because the remedy is still undergoing construction (durable covers) and will be graded so stormwater can runoff more efficiently.</p> <p>The Navy will evaluate this bioswale area during site specific studies.</p> <p>The following text was added to Section 6.6.1.2 for Parcel E:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
		<p>bioswales to control stormwater inundation and the potential impact of tidal influence on groundwater to stormwater communication in the swales.</p>	<p><u>At Parcel E, during the January 23, 2024 Five-Year Review site inspection standing water was observed near the southern end of a bioswale. The source of the water was unclear and concerns were raised by the agency representatives whether this was climate-related flooding. There were rain events before the site visit and the area is undergoing final cover installation and grading which may have been causing poor drainage. This area will be evaluated during site-specific studies.</u></p>
14	Appendix A, Section 2.3	<p>The text states, “Storm events of a certain magnitude trigger an ad hoc inspection with repairs.” DTSC requests further details on what defines the magnitude trigger, as well as ad hoc inspection details. DTSC notes that ad hoc inspections for storm events at or around the defined magnitude trigger should occur immediately after or near the end of the storm event due to the potential early signs of sea level rise. An inspection photo log detailing pictures and a map indicating direction of the view of the photos should be included to document the potential effects of early signs of sea level rise.</p> <p>Additional Comment Received 6/3/2024</p> <p>The comment response states that a major storm event that would trigger ad hoc inspections “is defined in the Parcel E-2 [Operations and Maintenance Plan (O&M Plan)] as ‘4.17 inches of precipitation or more over a 24-hour period (24-hour, 25-year storm).’” Section 2.6.1 of the most recent O&M Plan, <i>Final Operation and Maintenance Plan Remedial Action, Parcel UC-3</i>, dated July 2018, states that “Annual inspections will be performed during the rainy season, preferably after the first qualifying storm event, to enable determination of its effectiveness in providing drainage to the durable cover. A qualifying storm event is one that produces precipitation of 0.5 inches or more over a period of 48 hours.” The 2012 <i>Interim Monitoring and Maintenance, Landfill Gas Control System, Parcel E-2 Landfill</i> similarly describes “a significant rain event (1/2 inch or greater)”. Please advise if a different O&M Plan is referenced in the RTC or resolve the inconsistency.</p>	<p>The Parcel-specific O&M manuals discuss routine inspections and inspections following “hurricane-level” rainfall events as triggers for an additional inspection. A “major storm” is defined in the Parcel E-2 O&M plan as “4.17 inches of precipitation or more over a 24-hour period (24-hour, 25-year storm).” The following language has been added to the end of Appendix A, Section 2.3:</p> <p><u>Under the Emergency Response Plans included in the O&M manuals for Parcels B-1 (Engineering/Remediation Resources Group, Inc. 2016), B-2 (INNOVEX-ERRG Joint Venture 2018), C (Tetra Tech EC, Inc. and Engineering/Remediation Resources Group, Inc. 2017), D-1, (APTIM 2018; 2019), E-2 (ERRG, 2014) and G (Arcadis U.S., Inc. 2014) and IR-07/18 (Engineering/Remediation Resources Group, Inc. 2012), the following emergency response procedure is identified in the event of flooding [caused by intense storm events, high sea level, or wave action]:</u></p> <ol style="list-style-type: none"> <u>1. Immediately conduct visual inspection of area to assess damage and potential impact.</u> <u>2. In the event of safety hazard, immediately cordon off the affected area.</u> <u>3. In the event of slope failure, contact contracted geotechnical consultant, as appropriate, to participate in an evaluation of problem area with 48 hours. If necessary, conduct a geotechnical investigation of the failure in order to develop a corrective action plan.</u>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>4. <u>For damage or potential damage to components that affect site integrity, security, or safety, arrange repair or restoration within 2 weeks (weather and conditions permitting) to design conditions and in accordance with construction specifications.</u></p> <p>5. <u>Investigate preventive measures.</u></p> <p>6. <u>Notify Water Board, CalRecycle [for IR-07/18 and Parcel E-2], ROICC, DTSC, EPA, and CDPH.</u></p> <p>Response to Additional Comment:</p> <p>The O&M Plan referenced for Parcel E-2 is Section 4.1.2 of ERRG. 2014. <i>Preconstruction Operation and Maintenance Plan for Parcel E-2 Hunters Point Naval Shipyard San Francisco, California August 2014. Submitted as part of the Remediation Design Package for Parcel E-2.</i></p>
15	Appendix A, Section 3.1	The last paragraph states, “[groundwater table emergence] is projected to appear in several parcels by 2065.” Please revise the text to list the expected parcels.	<p>The text has been revised as follows:</p> <p>In summary, groundwater table emergence is expected to be minimal but present in Parcel D-1 by 2035 and is projected to appear in IR-07/18 and Parcels B-1, B-2, C, E, E-2 and G several parcels by 2065 in the highest SLR scenario. The Navy will track actual water table trends in the HPNS BGMP, to compare measurements to projections over time.</p>
16	Appendix A, Section 5.1	The list of parcels with projected groundwater emergence in 2065 is missing Parcel E-2. Please revise.	Yes, Parcel E-2 has been added to the list of projected groundwater emergence in E-2.
17	Appendix A, Section 5.3.1	This section largely assumes that all volatile organic compound (VOC) plumes will be successfully remediated before climate impacts occur in 2035. This is not an appropriate assumption for such a screening level assessment. Given the complex nature of the site, past delays in remediation efforts, and the potential for site conditions or remediation goals to change in the future, this assessment should conservatively assume that vapor intrusion is a potential risk until such time as VOCs are fully mitigated to better inform future Five-Year Reviews.	The CRA projects that any residual petroleum-based VOCs will be successfully remediated by 2035 and chlorinated VOCs by 2065. Ongoing sampling of relevant monitoring wells will be used to verify these assumptions. The goal of the CRA is to evaluate whether climate hazards, such as sea level rise or groundwater level rise, have the potential to create new or increased exposure pathways. Vapor intrusion is already being considered in current CERCLA documents and there is no indication that any of the climate hazards will create new or increased vapor intrusion. Sewer lines have been removed near all the buildings in projected groundwater impacted areas. The Navy expects groundwater flow to be horizontal, even as sea level rises, and the

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
			<p>groundwater table potentially rises with it in nearshore areas. Therefore, the Navy does not expect any new or increased vapor intrusion pathways, beyond those already addressed in current CERCLA documents.</p> <p>The following text was added to Section 5.3.1 of Appendix A:</p> <p><u>The CRA projects that any residual petroleum-based volatile organic compounds will be successfully remediated by 2035 and CVOCs by 2065. Ongoing sampling of relevant monitoring wells will be used to verify these assumptions. The goal of the CRA is to evaluate whether climate hazards, such as sea level rise or groundwater level rise, have the potential to create new or increased exposure pathways. Vapor intrusion is already being considered in current CERCLA documents, sewer lines in impacted areas have been removed, and there is no indication that any of the climate hazards will create new or increased vapor intrusion.</u></p>
18	Appendix A, Section 5.3.3	The text states: "Similarly, in Parcel B-2 (IR 26), annual monitoring indicates an exceedance for mercury, but additional remedies are planned to address that." As noted in comment 5 above, no such additional remedies have been selected. Please remove this sentence.	This sentence has been deleted.
19	Appendix A, Section 5.3.6	As noted in comment 4 above, the regulatory agencies have unaddressed concerns about the potential migration of lead contamination from groundwater to the freshwater wetlands. The vulnerability and resiliency assessment should be revised to assume that groundwater within 3 feet below ground surface (bgs), as identified in Figure 2-5, emerging groundwater in the freshwater wetland, and surface runoff from storms may be in contact with contaminated material.	Please see response to DTSC Comment #2.
20	Appendix A, Table 5-2	The impacts at Parcel E-2 are not consistent with the impacts identified in Table 2-3. The table should be updated to reflect the impacts in Table 2-3 and revised based on comment 19 above. Section 6.6.1.2 of the Five-Year Review should be similarly revised.	Not every impact in Table 2-3 results in a vulnerability in Table 5-2. However, in the case of Parcel E-2, Table 5-2 has been updated to be consistent with Table 2-3.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	DTSC Comments Dated April 30, 2024	Navy Response
21	Appendix A, Figure 3-1	The figure appears to indicate groundwater emergence at the northernmost point of the boundary between IR 7/18 and Parcel B-1, but this is not reflected in Table 2-2 or the text. Please confirm and revise as necessary.	<p>The groundwater emergence projected by a highly conservative methodology in IR-07/18 and Parcel B-1 in 2035 is minimal and nearshore. These parcels are projected to encounter groundwater emergence more substantially in 2065 in the CRA (Appendix A) and these parcels have been identified as impacted in 2065 in Table 2-3 and text.</p> <p>The following text has been added in reference to the “No” in Table 2-2 for IR-07/18 and Parcel B-1:</p> <p><u>Although Figure 3-1 shows groundwater emergence in a small portion of IR-07/18 and B-1 coastline, the projection is highly conservative and shows a minimal area of impact nearshore in 2035.</u> These parcels (IR 7/18 and B-1) are projected more clearly as impacted in the maps for 2065 and are identified as impacts for 2065 (along with Parcels B-2, C, D-1, E, and E-2)</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930		Responses By Navy	
Comment By Andrew Bain	Code/Organization Northern California Federal Facilities Section, Superfund Division, EPA Region 9			Date April 2024	
Project Title and Location Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023					Type of Review <input checked="" type="checkbox"/> Draft <input type="checkbox"/> Final <input type="checkbox"/> Other

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Climate Resilience Assessment Comments			
1	Climate Resiliency Assessment, Appendix A	<p>The assessment looked at certain climate-related events and identified future, potential vulnerabilities to human and San Francisco Bay receptors from heavy metals and low-level radiological objects due to groundwater emergence. The draft CRA recommends that parcel-specific assessments be performed to determine if the projected climate change vulnerabilities increase CERCLA risk at this Site. However, the Navy does not specifically relate its CRA findings to each parcel's FYR protectiveness evaluation. Rather, the Navy makes generalized statements about projected climate impacts on a site-wide basis. In the Final Report, EPA recommends that the Navy commit to prioritize and commence parcel-specific climate vulnerability assessments prior to the Sixth FYR to address probable impacts anticipated as soon as 2035.</p> <p>Additionally, EPA acknowledges that the Navy's CRA document substantively applies EPA's Climate Vulnerability Assessment ("CVA") guidance criteria. However, the Navy only projects climate impacts through 2065, which is less conservative than the 100-year scenario EPA, as well as the state, use. Lastly, EPA requests that the Report formally include criteria for evaluating extreme precipitation event projections and correlation and analysis of groundwater contaminant concentrations, when collecting water-level elevation measurements.</p>	<p>General Response Regarding the Climate Resilience Assessment</p> <p><i>Note that several changes were made to the CRA based on Agency, City of San Francisco and Public comments. Specific changes that address comments are provided in the responses below and additional changes can be reviewed in the Redline-Strike-out provided in the draft-final Five-Year Review.</i></p> <p>The Navy's CRA is a screening level assessment to identify potential vulnerabilities that can be further assessed in site-specific studies at HPNS. These site-specific studies and prioritization of parcels will be discussed with the agencies. Protectiveness statements in a Five-Year Review are only affected when the exposure pathway has the potential to be complete (groundwater is likely to emerge and land use is such that receptors could be exposed) and a future unacceptable health or risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). The Navy will assess Year 2100 projections in conjunction with site-specific studies. Changes to the original RTCs based on DTSC comments are added in blue font text below.</p> <p>The Navy Framework for CRA (2024) recommends that climate impacts on protectiveness determinations can be better evaluated with detailed</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Climate Resilience Assessment Comments			
			<p>site-specific studies have been conducted to verify projected impacts and vulnerabilities identified in the screening level CRA. As plans for these site-specific studies are developed, the agencies will have the opportunity to provide input. A prioritization meeting with the Navy and Agencies is proposed for November 2024.</p> <p>The following text has been added to the Other Findings for respective parcels (3.6.1.2, 4.6.1.2, 5.6.1.2, 6.6.1.2):</p> <p>The CRA estimates that groundwater emergence may occur in [IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas] by the year 2065.</p> <p><u>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum.</u></p> <p><u>However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the potential for increased vapor intrusion is identified in other CERCLA documents, ARICs for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</u></p> <p>For Parcel E-2, the following text has been added:</p> <p><u>Although the Parcel E-2 remedy components such as the sea wall were designed for resilience through a 3-foot rise in sea level (similar to the 2065 scenario), a site-specific study is recommended to evaluate the longer-term scenarios such as 2100.</u></p> <p>The following text has been added to Other Findings for Parcel D-1:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Climate Resilience Assessment Comments			
			The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035. Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025.

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
1	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel B-2, IR-26, Protectiveness Determination	Based on treatment efficacy uncertainties associated with the treatment for mercury in groundwater and the potential ecological impact on the San Francisco Bay, EPA does not support the Navy's <i>Short-term Protective</i> determination. Because of this uncertainty, and the agreed-upon need to enhance treatment delivery and/or explore other treatment options, EPA supports a Protectiveness Deferred determination. A <i>Short-Term Protective</i> determination is not appropriate because the MetaFix treatment for mercury in groundwater is not achieving its performance goals at two monitoring well locations, IR26MW49A and IR26MW71A. EPA recognizes, as documented by the Navy, that MetaFix could not be injected at certain locations due to limitations of the injection method. At our April 25, 2024, meeting, the Federal Facility Agreement (FFA) Parties discussed whether the Navy continues its plan to implement the enhanced delivery of Metafix, although the FFA regulatory parties believe that other treatment options need to be explored. The Navy agreed that the final <i>Fifth Five-Year Review Report</i> will include a date to submit a new FFA primary document, such as a technical memorandum. EPA expects the new primary document will be submitted as soon as practicable, and well ahead of the next Five-Year Review. Among other things, the new primary document should evaluate and analyze all available mercury groundwater monitoring data, including data collected from March 2018 to September 2022, and mercury exceedances at IR26MW49A and IR26MW71A, and propose next steps, including additional treatment options (tri-Agency letter of November 23, 2021). If the Navy is unable to commit to develop and provide a primary document within a timeline acceptable to the FFA regulatory parties, EPA may	<p>From the Navy's perspective, there are multiple lines of evidence presented in the Five-Year Review suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in the April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to "Protectiveness Deferred" determination. The Protectiveness Statement has been changed to:</p> <p>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions needs to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A primary document presenting the path forward will be finalized as soon as practicable but no later than July 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows:</p>

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		<p>need to consider the effect that the continued lack of sufficient treatment performance, and groundwater mercury data and documentation may have on Parcel B-2.</p> <p>Additional Comment Received 6/5/2024:</p> <p>It is Navy's opinion, not necessarily shared by the FFA regulatory parties, that multiple lines of evidence are presented in the Five-Year Review that suggest the concentrations are unlikely to exceed 0.6 µg/L. A higher level of direct proof rather than indirect weight of evidence is needed to better determine impact to the Bay.</p> <p>At the April 25, 2024 meeting, the FFA regulatory parties, including EPA, expressed concern with a protracted Navy effort given the issue is over three years old. EPA expects that the Navy will complete the final primary document as soon as practicable and not later than the end of July 2025. The primary document must include additional treatment options that have been initially screened for further evaluation. EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing the primary document.</p> <p>Please cite the date of the letter (November 23, 2021) and do not attempt to interpret what is meant by the tri-agency letter. EPA quotes the letter directly.</p> <p>As discussed at the April 25, 2024 meeting, the FFA Regulatory Parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in areas of prior injection refusal), and EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025.</p> <p>However, as stated in the November 23, 2021 triagency letter, EPA continues to expect that additional treatment options need to be screened, evaluated and pursued by the Navy. The Navy needs to acknowledge this.</p> <p>[With respect to the lines of evidence presented] Please reflect this is the Navy's belief/perspective. It is not necessarily shared by the FFA Regulatory Parties.</p> <p>The wording of what the Navy needs to do because of uncertainty is worded differently from that stated earlier (above). The wording needs to be consistent.</p>	<p>After completion of the 3-year post-ISS treatment performance monitoring, the FFA regulatory agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that "mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan." (EPA, DTSC, and Regional Water Board, 2021).</p> <p>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to October 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</p> <p>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</p> <ul style="list-style-type: none"> • Completion of source removal in 2008 via a time-critical removal action (Insight, 2009) • Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 performance monitoring locations to 2 performance monitoring locations and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-7. Mercury concentrations during the last 5 years of monitoring

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		Please reflect it is the Navy's belief/perspective (not the FFA Regulatory Parties) that mercury exceedances are not expected.	<p><u>have been below historical maximums and are consistently below 10 times the HGAL.</u></p> <ul style="list-style-type: none"> • <u>The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.</u> • <u>Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.</u> <p><u>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or <u>additional remedial alternatives/treatment that have been screened for further evaluation are</u> necessary to determine whether the remedy is protective of the Bay.</u></p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p> <p>3.5.1.3 Parcel B-2</p> <p><u>Yes. The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L. Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, <u>data demonstrating that mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L are lacking.</u> The RAO is stated as follows:</u></p> <p>... [no change from existing text]</p> <p><u>Protectiveness is not affected based on the following rationale: Data at the groundwater-surface water interface has not been collected;</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
			<p>however, <u>from the Navy's perspective</u>, it is not expected that mercury exceeds 0.6 µg/L based on the following rationale:</p> <ul style="list-style-type: none"> • <u>Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009).</u> • Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. • The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). • The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996). Furthermore, mixing studies conducted by State of Washington, Department of Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023).

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
			<ul style="list-style-type: none"> • <u>The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-7).</u> • <u>Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in sentinel wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4).</u> <p>Review of annual O&M inspections, historical documents... [no change from original text].</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 3-9 (Parcel B Issues, Recommendations, and Follow-up Actions):</p> <p><u>Issue: There is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater</u></p> <p><u>Recommendation: Evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or remedial alternatives/treatment that have been screened for further evaluation. Prepare a primary document presenting the path forward.</u></p> <p><u>Milestone Date: 10/31/2025</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p> <p><u>Response to Additional Comment:</u></p> <p>The text has been updated as suggested by EPA's additional comment as denoted in blue font above. The date of July 31, 2025 was identified for the milestone date during the April 2024 meeting. It was determined after this meeting that since this is an FY25 project award, it would be affected by the financial brownout. NAVFAC's financial system is being changed which not allow the award of FY25 projects to start until after December 31, 2024. Due to this uncontrollable issue, the Navy will require a date change to October 31, 2025. This date change is shorter than the duration of the brownout.</p>

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
2	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel C, B-aquifer, Protectiveness Determination	<p>This comment addresses the B-aquifer characterization. EPA does not support the Navy's draft <i>Short-term Protective</i> determination but rather a <i>Protectiveness Deferred</i> determination because from EPA's perspective, for groundwater, information has come to light that calls into question the protectiveness of the remedy (Question C of the Report), and more information is needed to determine protectiveness and whether an unacceptable risk exists.</p> <p>In general, both the A-aquifer and B-aquifer (and bedrock) groundwater flows towards the San Francisco Bay. The Navy's cross-sections in the RU-C2 area confirm there are gaps or holes in the aquitard that enable communication between the A- and B-aquifers, and the Navy's data confirm there is contamination in the underlying B-aquifer at RU-C2 downgradient of the gaps or holes, and in the deep Fractured-Water Bearing Zone (deep F-WBZ) at RU-C4. Consequently, the A-aquifer cannot be isolated as protective.</p> <p>In response to FFA regulatory concerns, the Navy has agreed to, but has not initiated, a full and timely characterization of the B-aquifer in the RU-C2 area, including the upper F-WBZ below and in contact with the B-aquifer. The Navy has also agreed to monitor B-aquifer wells as part of performance monitoring of the groundwater treatment of the A-aquifer at RU-C2 (RAWP Phase III). With respect to the Deep F-WBZ at RU-C4, which was the subject of an informal dispute brought by the Regional Water Quality Control Board and EPA, the Navy has submitted a draft workplan to fully characterize the nature and extent of contamination and groundwater flow patterns to the San Francisco Bay. The workplan has not been finalized and work has not yet commenced.</p> <p>For the Final <i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the full and timely characterization of the B-aquifer in the RU-C2 groundwater area, and the Navy's anticipated timeframe for developing these documents. An anticipated timeframe for the performance monitoring of the groundwater treatment at RU-C2 in both the A- and B-aquifers should also be provided. At the April 25, 2024, meeting, the Navy expressed agreement in concept that these commitments have been made. If the Navy is unable to commit to develop and provide the requested primary documents within a timeline acceptable to the</p>	<p>Navy acknowledges that while, from the Navy's perspective, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to "Protectiveness Deferred" until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ investigation for RU-C4 and the B-Aquifer and Upper F-WBZ investigation for RU-C2.</p> <p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the investigations currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area to address these data needs as follows:</p> <p>Yes. The following information has come to light that could question the protectiveness of the remedy:</p> <ul style="list-style-type: none"> • <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-aquifer and Upper F-WBZ in RU-C2 are required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u> <p>The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B-aquifer present potential unacceptable risks to Bay receptors. In order to make a protectiveness determination, the following action, at a</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		<p>FFA regulatory parties, EPA reserves its right to reassess our evaluation of B-aquifer and Deep F-WBZ groundwater at Parcel C.</p> <p>Additional Comment Received 6/5/2024:</p> <p>Please clarify that this is the Navy's belief/perspective, not necessarily that of the FFA Regulatory Parties.</p> <p>The Navy states that it "...will complete the Deep FWBZ investigation for RU- C4 and the B-Aquifer investigation." This statement needs to clearly identify two separate investigations: the Deep FWBZ investigation in RU-C4 (which is the subject of the Water Board/EPA Informal Dispute, and which is currently in the "Draft Final Work Plan" stage) and the B-aquifer and underlying Upper F-WBZ in the RU-C2 area (still in development).</p> <p>The first component of the RU-C2 investigation has been agreed to by the Navy. The Navy has committed to collecting and evaluating B-aquifer data as part of the performance monitoring of the A-aquifer remedial action (as documented in the Navy's Response dated 2/8/24 to EPA's Item Nos. 1 and 2 dated 3/14/23 & 11/22/23 in Appendix H of the Final Parcel C Phase III Remedial Action at Rus C2 and C5, dated March 2024).</p> <p>The protectiveness statement does not include the development of a conceptual site model (CSM) of the A- and B-aquifers and shallow F-WBZ at RU-C2 and the deep F-WBZ at RU-C4. The statement should be revised to include the development of CSMs for both RU-C2 and RU-C4. As EPA discussed at the April 25, 2024 meeting, regarding RU-C2, the collection of B-aquifer and shallow F-WBZ data, as appropriate, should commence with the performance monitoring period, which EPA expects will be within the next two years. EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing primary documents, such as workplans.</p>	<p><u>minimum</u>, needs to be made: complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, <u>as appropriate</u>, to assess potential impacts to Bay receptors. For the <u>Deep F-WBZ, a draft-final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans. Depending on the results of the data analyses, the development of conceptual site models, and necessary steps, these actions could possibly be completed within the next 5 years, at which time, as appropriate, a protectiveness determination will be made.</u></p> <p>Response to Additional Comment:</p> <p>The revisions suggested by the EPA have been made in the comment above as denoted in <u>blue font</u>.</p> <p>Additionally, the following issue/recommendation has been added to the Five-Year Review Summary Table and Table 4-8 (Parcel C Issues, Recommendations, and Follow-up Actions):</p> <p><u>Issue: There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F-WBZ and unacceptable discharges to the Bay are not and will not occur.</u></p> <p><u>Recommendation: Complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria to assess potential impacts to Bay receptors. Where warranted, additional actions or changes to the remedy will be recommended at the conclusion of these investigations.</u></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
			<p><u>Milestone Date: 7/31/2029</u></p> <p><u>Interim Milestones: Completion of F-WBZ investigation fieldwork 11/30/2025, completion of the F-WBZ investigation report 11/30/2026¹</u></p> <p><u>Affects Protectiveness: Protectiveness Deferred</u></p> <p><u>Footnote:</u></p> <p>¹ The Parcel C B-aquifer study will also be conducted within the overall timeframe to meet the milestone date; however, because funding and contracts are not currently in place, the interim milestones are unavailable.</p>
3	Five-Year Review Summary Form, Protectiveness Statements, page xxi, Parcel E-2, Protectiveness Determination	<p>EPA agrees with the Navy's <i>Will Be Protective</i> determination, however, additional actions are requested in the Final <i>Fifth Five-Year Review Report</i>. For landfills of this nature, the presumptive remedy in both the CERCLA and RCRA programs is to "cap and contain the waste," and include appropriate environmental controls and monitoring for, at a minimum, stormwater, groundwater, and landfill gas. After a careful review and comparison of cleanup alternatives against EPA's nine evaluation criteria, the Parcel E-2 landfill ROD selected a remedy consistent with the presumptive remedy approach yet included several special design elements to account for the unique nature and location of this particular landfill. EPA agrees that Parcel E-2 is still undergoing remedy construction, including relatively minor work on the cover system, the completion of the landfill gas extraction and conveyance system, and the completion of the freshwater (FW) and tidal wetlands.</p> <p>Notwithstanding EPA's agreement that the remedy is still under construction, given that the Navy has deferred responding to Question A ("is the remedy functioning as intended by the decision documents?") in the Report, and given that certain fundamental landfill containment and control facilities, such as the nearshore slurry wall, the upland slurry wall, and the landfill cover system have been constructed, EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers</p>	<p>The Navy acknowledges that EPA agrees with the Will Be Protective determination as long as the minimum information and analysis needs of the FFA Regulatory Parties, including the detailed status of all planned and installed wells, are provided on an agreed upon schedule.</p> <p>Because the Remedy at Parcel E-2 is currently under construction the Navy's protectiveness determination is "Will be Protective". The construction has prioritized components to address potential migration to the Bay first with the following components completed:</p> <ul style="list-style-type: none"> • Hot spot removal, Nearshore slurry wall, Shoreline revetment • Soil excavation to create freshwater and tidal wetlands • Radiological characterization, installation of foundation soil layer in preparation of Phase III landfill cover installation • Final cover installation <p>Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5 and in the Five-Year Review Summary Table under Other Findings) to document the Navy's commitment to continue to construct the remedy as well as analyze currently available data in a timely manner on a schedule agreed to among the FFA parties for the remedy components that are in place. As discussed at the April 24, 2024 meeting, the specific minimum</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		<p>underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. For the Final <i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the evaluation work, and the Navy's anticipated timeframe for developing those documents. At the April 25, 2024, meeting, the Navy expressed agreement in concept but awaits further information from the FFA regulatory parties, which is forthcoming in a tri-Agency letter.</p> <p>If the Navy is unable to provide the required list and schedule in the Final <i>Fifth Five-Year Review Report</i>, EPA may need to consider the effect that the lack of sufficient groundwater data and documentation may have on potential performance issues at Parcel E-2.</p> <p>In addition, EPA has conveyed, most recently at the April 25, 2024, meeting, that the Navy needs to amend the appropriate primary document to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. At the April 25 meeting, the Navy agreed in principle and will propose the primary document that must be amended and an anticipated timeframe for modifying that primary document.</p> <p>Additional Comment Received 6/5/2024:</p> <p>As stated in our comments and at the April 25, 2024 meeting, it is EPA's position that if the Navy is unable to agree to the timely analysis of existing Parcel E-2 groundwater data, EPA may need to consider the effect this may have on potential performance issues at Parcel E-2 and our current protectiveness determination.</p> <p>As discussed, most recently at the April 25, 2024, meeting, the Navy needs to amend the appropriate primary document(s) to change/replace an existing</p>	<p>information and analysis needs of the FFA Regulatory Parties, including a detailed status of all wells, are forthcoming in a tri-agency letter, after which the FFA parties will meet to discuss specific tasks and schedules. As discussed informally and in EPA's comments, the Navy recognizes that EPA expects the Navy will immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay:</p> <p><u>6.6.1.5 Parcel E-2 Other Findings</u></p> <p>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. <u>A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (for example, Nearshore Slurry Wall and landfill cover).</u> The following is a summary of the remaining RA work, interim studies, and key milestones planned prior to completing the RACR:</p> <ul style="list-style-type: none"> • <u>Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018):</u> <ul style="list-style-type: none"> - <u>Landfill Gas System (Phase IVa) anticipated in 11/30/2025</u> - <u>Wetlands (Phase IVb) anticipated in 11/30/2027</u> • <u>Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as a new compliance point by revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024.</u> • <u>Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated by 11/30/2024.</u>

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		<p>compliance point for monitoring methane, an explosive gas, at the facility property boundary. This is overdue and must be done as soon as practicable.</p> <p>We suggest the primary document(s) be identified and a draft schedule is developed for discussion with the FFA Regulatory Parties as soon as possible and not later than September 30, 2024. The Navy's informal exchange of one point of compliance with another, without amending the necessary primary document(s), is not acceptable.</p> <p>Our concerns stand and must be appropriately addressed:</p> <p>EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.</p> <p>Except as noted, below, EPA is not providing comment or response on the Navy's inclusion, under "Navy Response (May 2024)" pertaining to EPA's comments of 4/30/2024, of "Water Board specific concerns." Irrespective, EPA's responses of 6/4/2024 presented herein stand.</p> <p>Regarding what the Navy notes, as stated at the April 25, 2024 meeting, the FFA Regulatory Parties expect that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties</p>	<ul style="list-style-type: none"> Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 8/31/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction Remedial Action Performance Report is anticipated by 12/31/2024. <p>Water Board specific concerns and responses were added to the technical assessment for Parcel E-2 (Section 6.5.1, page 6-20 and 6-21) as follows:</p> <p>While the remedy is currently under construction, Agency concerns have been raised regarding the completed components:</p> <ul style="list-style-type: none"> Concern: The Upland Slurry Wall was not installed as designed. Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a "hanging wall" (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was determined to be bedrock which has a lower permeability than the surrounding aquifer material. The draft final work plan to evaluate the Upland Slurry Wall performance is currently under way and work is anticipated to begin in 2025. Concern: The turbidity curtain was not used during remedy construction. A 2,000-foot US Department of Transportation Type III offshore turbidity curtain was installed during shoreline work in accordance with the Design (ERRG, 2014) on November 30, 2016 as documented in the Phase II Remedial Action Construction Summary Report (Aptim, 2021). The turbidity curtain was removed after shoreline activities were completed, in accordance with the RAWP Appendix D, Environmental Protection Plan (CB&I, 2016) which states "During shoreline earthwork (revetment installation, wetlands excavation, and site grading), a turbidity curtain will be

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
		<p>need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.</p>	<p><u>deployed as the BMP for sediment control.” Upcoming nearshore work, such as wetland installation, will be conducted in accordance with the design and RAWP.</u></p> <ul style="list-style-type: none"> <p>Concern: The Navy has not provided all stormwater best practices documentation. Navy provided the following final primary documents that contain stormwater best practices: Remedial Action Work Plans (RAWPs) (CB&I, 2016; KEMRON, 2018); Stormwater Protection Plan; and stormwater best practices monitoring documentation during construction (provided in the Phase I RACR [Gilbane, 2018a] and Phase II RACSR [APTIM, 2021], which will also be provided in the forthcoming Phase III RACSR [pending]). The Navy also responded to the Water Board’s December 3, 2022, and January 11, 2023, and May 23, 2023 follow-up e-mail requests for stormwater records.</p> <p>Concern: There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future. Lead was removed from the tidal wetland areas according to the Phase II RAWP (KEMRON, 2018) and subsequent Fieldwork Variance #5 (Appendix G of APTIM, 2021). Exceedances shown on Figures 6 and 7 of the RACSR (APTIM, 2021) were initial samples prior to over-excavation to remove lead-impacted soils. Post-over-excavation samples were found to be below the RG. Additionally, the landfill cap geomembrane and geosynthetic clay liner layers prevent vertical infiltration of rainfall from reaching the underlying landfill waste and promoting leachate. The geocomposite drainage layer carries any flow that infiltrates through the vegetative layer to the perimeter ditches. The surface water from the eastern half of the site will be collected by the eastern perimeter ditch and will drain directly into the Bay through the culvert pipe at the southeast corner of the site. The surface water from the western half of the site will be collected by the western perimeter ditch and will flow into the freshwater wetlands with excess runoff draining through the freshwater wetlands outfall pipe into the Bay. The chemically contaminated soils near the</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
			<p><u>freshwater wetlands were removed during previous hot spot excavations and excavations during Phase II subgrade preparations, with confirmation testing to show that they are below action limits in the Final RACSR for copper, lead, total PCBs, and total TPHs. There is no required tie into the underlying Bay Mud at the Wetlands Boundary. Refer to Detail 4 on Design Drawing C18 from the DBR for the cover termination at the wetlands boundaries.</u></p> <ul style="list-style-type: none"> • <u>Concern: There may be impacts to soil due to RCRA hazardous waste handling in stockpiles during remedy installation:</u> Navy is planning, at agencies' request, to sample the soil under former Parcel E-2 stockpile locations now covered with radiological retesting radiological screening yard pads for metals to confirm that <u>the stockpiles didn't impact the soils around them during storm events. This will be completed after the pads are removed.</u> <p>The Navy understands that there is a pending data request and notes the following:</p> <ul style="list-style-type: none"> • Groundwater elevations are available in the BGMP reports for all installed wells at Parcel E-2 • COC data for A- and B-aquifers are available in the BGMP for all installed wells at Parcel E-2 • Leachate testing is unavailable as the leachate ports have not yet been installed • Extraction well data, french drain sample port data, freshwater wetland piezometer and wetland outfall data is not available because these components have not yet been installed • Detailed plume and flow direction cannot be determined as the full monitoring well network has not been installed; However, groundwater modeling conducted during design planning supports the theoretical performance of the remedy. This is included in Appendix F of the RD (ERRG, 2014) <p>The Final RAWP (KEMRON, 2018) covers all the remaining remedy installation elements in the RD/ROD. The Final RAMP for Parcel E-2</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2			
			<p>(ERRG, 2014b) will be used to monitor the remedy once its installation is completed.</p> <p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15.</p> <p>ERRG, 2014b. Final Remedial Action Monitoring Plan, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. August 15.</p> <p>CB&I Federal Services, LLC. (CB&I). 2016. Work Plan Shoreline Revetment; Site Grading and Consolidation of Excavated Soil, Sediment, and Debris; and Upland Slurry Wall Installation Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. October 12.</p> <p>KEMRON Environmental Services (KEMRON). 2018. Remedial Action Work Plan, Final Cove, Wetlands, and Landfill Gas Control and Containment System, Remedial Action Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. December 26.</p> <p>Gilbane. 2018. Remedial Action Completion Report, Hot Spot Delineation and Excavation and Nearshore Slurry Wall Installation, Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. June.</p> <p>APTIM. 2021. Remedial Action Construction Summary Report, Parcel E-2 (Phase II), Hunters Point Naval Shipyard, CA. April 6</p> <p><u>Response to Additional Comment:</u></p> <p>The revisions suggested by the EPA have been made in the comment above as denoted in blue font.</p>

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
1	General	<p>Air Monitoring Program: Throughout the HPNS Site, the Navy implements a robust dust control and air monitoring program. This program includes requirements for dust control activities, such as wetting soil during excavation and stockpiling, covering soil stockpiles with soil fixative, tarping loads of soil when transported, etc., in addition to monitoring real-time PM10, asbestos, radionuclides of concern, and filter-based PM10, Total Suspended Particulates, and metals. Air monitoring stations are placed throughout the site to evaluate community exposure. The FYR does not mention these activities, in spite of significant interagency and community coordination. Please add information about the Navy's dust control and air monitoring program, summarize data collected over the last five years and discuss the impact on short-term protectiveness.</p> <p>Additional Comment Received 6/5/2024:</p> <p>EPA appreciates the additional description about the site-wide air monitoring program implementation status and its importance to the regulatory and local communities.</p>	<p>Comment acknowledged; air monitoring program information was added to Section 1.4 as follows:</p> <p>Section 1.4.4 Air Monitoring and Dust Control</p> <p>Dust control is of paramount concern at HPNS and comprises two major goals of equal importance: (1) protection of worker safety and health, and (2) protection of the nearby community and public at large. A dust control plan is included in Remedial Action Work Plans (RAWPs) for all onsite activities that have the potential to generate dust, including, but not limited to, installing durable covers, installing landfill caps, conducting radiological retesting and trenching activities, and initiating building demolition. Dust mitigation measures include the following: track-out control to dislodge any dirt adhering to tires, wetting soil during earthmoving and /earth -disturbing activities and on stockpiles, minimizing the height from which soil is dropped during earthmoving activities, equipping trucks with tarping systems to cover loads during soil transport, minimizing truck traffic distances, and using real-time air monitoring.</p> <p>Air monitoring is performed to confirm worker safety and provide reasonable assurance of the protection of the surrounding residents in accordance with National Institute for Occupational Safety and Health-approved air sampling methodology. The following three types of air monitoring are conducted during intrusive construction activities:</p> <ul style="list-style-type: none"> • <u>Air quality monitoring for total suspended particulates, manganese, arsenic, lead, particulate matter less than 10 microns in diameter, and asbestos</u> • <u>Air monitoring for radionuclides of concern (ROCs)</u> • <u>Personnel monitoring</u> <p>The air quality sampling will be used to assess the status of air quality compliance and to evaluate modifications to project activities in the event of compliance concerns. Representative meteorological data for the general project areas, specifically wind speed and direction, are used to identify the most appropriate locations for the air monitoring.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
			<p>stations. Air samplers and monitoring stations are located in the most practical locations upwind and downwind from the project site according to available wind speed and direction data. In addition, real-time air monitors are employed to provide immediate information for dust levels present at the site perimeter. The Navy provides updates to the community via a public website (Navy, 2014).</p> <p>Available reports between November 2018 through November 2023 were reviewed for Parcels with earthmoving activities and Table 1-4 summarizes the type of work, date range, and findings during air monitoring. There were no major issues with air monitoring results identified during the monitoring period.</p> <p>Reference: Navy. 2024. <i>Documents: Air Monitoring</i>. https://www.bracpmo.navy.mil/BRAC-Bases/California/Former-Naval-Shipyards-Hunters-Point/Documents/#air-monitoring</p>
2	The Fourth Five-Year Review, Parcel B Issues, Recommendations, and Follow-up Actions	<p>There was a criticism of the Fourth FYR that has not been described in sufficient detail. EPA needs confirmation that this issue is addressed:</p> <p><i>“The regulatory agencies do not agree with the Navy’s risk assessment methodology used to reduce the ARICs for VOC vapors.”</i> This is described in tables for Parcels B-1 and B-2, in Table 3-4 and elsewhere (e.g., Table 5-5, Fourth Five-Year Review Parcels D-1, D-2, UC-1, and G Issues, Recommendations, and Follow-up Actions, for Parcels D-1 and G).</p> <p>Additional Comment Received 6/5/2024</p> <p>The RTC refers to Section 8 (“Revised Preliminary Soil Gas Action Levels and Post-Removal Human Health Risk Assessment Methodology”) of the Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123 (September 2023) for the Navy’s approach to evaluating VI ARICs. Regarding the approach to establishing site-specific and chemical-specific soil-gas attenuation factors (AFsg) described in Section 8.3 of that 2023 document, EPA has multiple concerns with the technical defensibility of the approach. Section 8.3 (Tier 2) lists six bullets to describe elements of the approach to establishing site-specific AFsg values. Only one of these, bullet 2, addresses a scientifically defensible approach to establishing site-specific AFsg values, namely, the collection of co-</p>	<p>One of the objectives of the Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123 (September 2023) is to utilize post-Remedial Action (RA) soil gas data and compare to updated soil gas action levels (SGALs) to evaluate ARICs for VOC vapors. This is in accordance with the Fourth Five-Year Review recommendations. The revised preliminary residential SGALs will be used as a first-tier screening tool in the post-removal vapor intrusion (VI) Human Health Risk Assessment (HHRA) to determine grid blocks that may require additional evaluation. Based on the results of the first-tier data screening, a second-tier evaluation may be needed. The second-tier evaluation will involve use of site-specific or modeled attenuation factors based on site-specific chemical, microbial, and /or geotechnical data. Hence, the results of the post-RA VI HHRA will be used to evaluate the VI ARICs for IR-10 and will be presented in the IR-10 RACR.</p> <p>Details for this methodology is described in Section 8 of Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123 (September 2023).</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
		<p>located site-specific indoor air – subslab or near-source soil gas data. What is not mentioned in this bullet, but should be, is that the paired data should be collected contemporaneously in both cold and warm seasons with HVAC systems off and with a sufficient amount of paired data that statistically robust AFsg values could be determined, and the values should be consistent with the RME approach (i.e., not a central tendency approach). Such an empirical approach would likely be acceptable, pending evaluation of the work plan and resulting data by agency subject matter experts, including statisticians. Other bullets describe methods that are unacceptable for reasons that are briefly described here. Bullet 1 describes microbial studies of aerobic degradation of vinyl chloride, which is not the domain of attenuation factors based on mass transfer of a chemical between different media. Biological mitigation is addressed in the site-specific soil vapor concentrations themselves and should not be treated as a physical partitioning constant. In any case, it would need to be rigorously demonstrated that laboratory microbial studies have direct relevance to in situ conditions and that observed degradation parameters (e.g., kinetics) could be treated as constant without consideration of site-specific conditions (e.g., populations of metabolically active bacteria, temperature, moisture content, etc.). Use of the EPA spreadsheet adaptation of the Johnson and Ettinger (1991) model (bullet 4) would not be sufficiently representative of site-specific conditions to justify establishing AFsg values; note that the “JE_README” tab of the EPA J&E spreadsheet explicitly states in red, boldface font that “The J&E model does not replace the EPA VISLs [Vapor Intrusion Screening Levels].” Similarly, evaluation of soil lithology (bullets 3 and 5) is not sufficiently rigorous to quantitatively establish site-specific AFsg values. Published state-wide (California) empirical studies of attenuation factors are also not defensible for establishing site-specific AFsg values unless it can be definitively demonstrated that the state-wide database is applicable to the site of interest. In essence, site-specific AFsg values should be based on a robust database of site-specific measurements of paired indoor air – subslab or near-source soil vapor data. Further, it does not enhance a sense of objectivity to state the conclusions of studies before they are conducted; almost every bullet, including bullet 2, which describes empirical studies that have presumably not</p>	<p>Table 3-4 (now 3-5) has been updated to indicate that this issue/recommendation is ongoing, the work plan was finalized in September 2023 and fieldwork is underway.</p> <p>Response to Additional Comment:</p> <p>The Navy acknowledges that there is a disagreement with the approach presented in the Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123. However, reevaluating the SGALs and ARIC boundaries is not carried forward as an Issue/Recommendation in the Fifth Five-Year Review because the LUC RD lays out the pathway to modify the ARICs by the FFA signatories, implying that all need to agree on the change prior to making modifications to the ARIC. The following is an excerpt from the Parcel G LUC RD (emphasis added):</p> <p style="padding-left: 40px;">Alternatively, the ARIC for VOC vapors may be modified <i>by the FFA signatories</i> as the soil and groundwater contamination areas that are producing unacceptable vapor inhalation risks are reduced over time or in response to further soil, vapor, and groundwater sampling and analysis for VOCs that establishes that areas now included in the ARIC for VOC vapors do not pose an unacceptable potential exposure risk due to VOC vapors.</p> <p>This is also emphasized in current status to the Recommendation from the Fourth Five-Year Review for Parcel D:</p> <p>No changes to the VOC ARIC are planned for Parcel D-1 or G at this time. Because attenuation of VOCs is likely to occur, ARICs for VOC vapors, and likewise SGALs that are the basis of the ARICs, in Parcels D-1 and G will be re-evaluated during preparation for property transfer. While there is disagreement about the method to calculate the SGALs, which may affect ARIC boundaries, the final ARICs that will be surveyed and recorded in quitclaim deeds and covenants to restrict land use will be established in agreement with the BCT.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
		been conducted yet, states that the approach will “demonstrate that the USEPA (2015) generic AFsg of 0.03 is overly conservative” (or words to that effect).	
3	Section 3.5.1, Table 3-3, Section 4.4.1.1	<p>Misrepresentation of evidence that TCE biodegradation is an effective remedy Multiple times in the document, (e.g., Section 3.5.1 “Question A: Is the remedy functioning as intended by the decision document?”; Table 3-3 “Parcel B Remedial Action Summary and Expected Outcomes”), the claim is made that: “<i>The presence of VC demonstrates that TCE biodegradation is occurring in groundwater in Parcel B-1 (TRBW, 2023).</i>” A similar statement is made for RU-C1 (Section 4.4.1.1, Remedy Implementation, p. 124): “<i>The presence of VC indicates that biodegradation is occurring.</i>” Although appearance of VC may indicate that reductive dechlorination is occurring (or has occurred), it is not necessarily evidence that <i>in situ</i> biodegradation is working as intended. Stalling of biodegradation and accumulation of VC can pose more risk than the presence of the parent compound (TCE), as VC is a more potent carcinogen than PCE and TCE.</p> <p>Additional Comment Received 6/5/2024: Thank you for addressing the comment.</p>	<p>This statement has been removed from Section 3.5.1 in relation to Parcel B-1 groundwater. Note that the work being conducted at Building 123 will remove VOC source material.</p> <p>The discussion in Section 4.1.1.1 for RU-C1-1 has been changed to: “...Benzene, PCE, TCE, and VC exceeded RGs in March and benzene and PCE exceeded the RGs in September. PCE also exceeded ATC in March but not in September. The presence of VC indicates that biodegradation is occurring. Performance monitoring is expected to continue until data are statistically less than ATCs. Based on data up to December 2021 PCE data is statistically higher than the ATC; however, statistical trends indicate it is probably decreasing (IGI, 2023). <u>Conditions are generally conducive to anaerobic degradation indicated by depleted dissolved oxygen (DO, less than 1 mg/L), presence of dissolved redox-sensitive metals (iron and manganese), and methane. The presence of ethene or ethane also indicates that complete biotic or abiotic degradation is occurring (IGI, 2023).</u>”</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
4	Five-Year Review Summary Form, Review Status, Triggering Action Date and Due Date, page xvii; and Section 2.6 Next Five-Year Review, pg. 2-2	<p>As EPA outlined in its November 16, 2023, letter, the trigger action date is the Remedial Action Start date, not the signature date of the Fourth FYR. As such, the statutory due date for the Sixth FYR is November 8, 2028. Please correct the table to reflect the statutory due date.</p> <p>Additional Comment Received 6/5/2024:</p> <p><i>EPA continues to disagree with the Navy's interpretation about the signature date. We note that the Navy/Marine policy does not preclude conducting the subsequent FYR sooner, consistent with EPA's stated statutory policy and respectfully requests that the Navy reconsider its position.</i></p>	<p>The May 2011 Navy/Marine Corps Policy for Conducting CERCLA Five-Year Reviews establishes subsequent signature dates for Five-Year Reviews as no more than five years from the date of the last signature (Section 5.2a, Navy 2011), therefore the signature date of the Sixth Five-Year Review will be July 31, 2029 (or 5 years from the signature date of this Five-Year Review). This is further reiterated in a June 2014 memorandum <i>Five-year Review Procedures – Update to DoD Manual (DoDM) 4715.20 “Defense Environmental Restoration Program (DERP) Management,” March 9, 2012.</i></p> <p>Reference:</p> <p>Navy. 2011. <i>Navy/Marine Corps Policy for Conducting Comprehensive Environmental Response, Compensation, and Liability Act Five-Year Reviews</i>. June.</p> <p>Office of the Under Secretary of Defense. 2014. Memorandum Dated May 16, 2014. Subject: <i>Five-year Review Procedures – Update to DoD Manual (DoDM) 4715.20 “Defense Environmental Restoration Program (DERP) Management,” March 9, 2012.</i></p> <p>Response to Additional Comment:</p> <p>The Navy will take this request under advisement.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
5	Five-Year Review Summary Form, Issues/Recommendations, page xviii, second item, Changed Site Conditions, Parcel D-1, Other Findings	<p>With regards to Radiological Objects, and other wastes left in place, and based on the Navy's initial evaluation for potential, permanent groundwater emergence impacts at Parcel D-1 in 2035 (p. 30 of the Report), EPA recommends that the Navy prioritize and commence a Parcel D-1 specific CRA vulnerability assessment study to address groundwater emergence prior to the Sixth FYR.</p> <p>Additional Comment Received 6/5/2024: EPA requests that the Navy commit to a specific date in 2025 to produce a primary document and begin scoping the monitoring well construction and ground elevation details in Parcel D-1 data (and in other Parcels projecting groundwater emergence).</p>	<p>During a site walkthrough in Parcel D-1 by the Navy CRA team on April 22, 2024, to ground truth some of the projections in the CRA (Appendix A), the Navy team could not identify any topographic features that would be indicative of the projected groundwater emergence in Parcel D-1. During follow on site-specific studies, the Navy will more closely examine monitoring well construction and ground elevation details in Parcel D-1 data (and in other Parcels projecting groundwater emergence as well). Site specific studies and prioritization of parcels will be discussed with the agencies.</p> <p>Response to Additional Comment: The Navy has committed to initiating the Parcel D-1 specific study by Spring 2025. This date has been added to the Other Findings summary in the Five-Year Review summary form and Section 5.6.1.2.</p>
6	Section 1.1 Purpose and Approach, page 1-1, second paragraph, last line	See Comment 4 above.	See response to EPA Comment 4 above.
7	Section 1.4.1 Per and Polyfluoroalkyl Substances, pg. 1-7, 3rd paragraph, 1st line	<p>The document states "Current exposure pathways for PFAS are potentially incomplete at HPNS." Immediately following, the document states that there is a prohibition to using drinking water yet provides no discussion of other potential exposure pathways, such as to the SF Bay environment. There's no discussion of what uncertainty leads the Navy to state that the exposure pathway is only "potentially" incomplete. Is this because the PFAS investigation is incomplete? Please provide additional discussion to explain the statement.</p> <p>Additional Comment Received 6/5/2024: EPA appreciates the clarification and agrees with the description.</p>	<p>This language has been replaced with lines of evidence supporting that there is currently no known imminent risk to PFAS for both human and ecological receptors. The term "potentially incomplete" was used as a CERCLA risk assessment has not been conducted to fully validate the current lines of evidence regarding potential exposures. Furthermore, even if a complete exposure pathway is present, that does not definitively indicate that there is unacceptable risk exposure to PFAS. Further evaluation will be conducted under the upcoming CERCLA PFAS RI to verify.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
		Other Comments	
8	Section 1.4.3.1 Progress since the Fourth Five-Year Review, page 1-9:	<p>The addendum evaluating the protectiveness of remedial goals for building structures, as described, does not accurately reflect several important facts/updates. First, EPA did not approve this addendum nor the follow-on building re-testing workplans due to our collective inability to reconcile technical differences between the Navy's use of the RESRAD Build model and EPA's Building Preliminary Remediation Goal calculator. More importantly, based on a substantive change in building reuse plans and recent congressional authorization, the Navy is now preparing to demolish and dispose of all potentially radiologically impacted buildings, except two historical structures, rather than certify them for unrestricted reuse. The main objective moving forward, therefore, should be to ensure building materials are characterized sufficiently to help determine how to safely protect human health and the environment during demolition and how to dispose of the debris in a regulatory-compliant way. To that end, we appreciate that the Navy is working closely with the California Department of Public Health to identify the protocol the Navy will be using to clear buildings for disposal. Once clarified, while the ROD already contemplates building demolition as a part of the remedy, EPA recommends the FFA members more clearly document the approach that the Navy will be using for the disposal of the building materials, as well as the significantly increased disposal costs, in the appropriate post-ROD change document.</p> <p>Additional Comment Received 6/5/2024: EPA appreciates the clarification.</p>	<p>The additional information about building demolition and Building Addendum applicability has been added to Section 1.4.3.1 as follows:</p> <p>... Following the recommendation from the Fourth Five-Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs for soil and building structures, which concluded that the current RGs are protective for all future land users (Navy, 2020a, 2020b). <u>There was Agency disagreement over the calculation methods for building RGs; however, the Navy is planning on demolishing all radiologically-impacted buildings at each Parcel in response to a letter from the City of San Francisco's Office of Community Investment and Infrastructure, dated February 3, 2022, requesting that, before transferring the remaining Navy-owned property at HPNS, the Navy must demolish all remaining buildings (both radiologically impacted and nonradiologically impacted) on that property except for five small structures on the National Historic Register (OCII, pers. comm., 2022). The demolition and disposal of radiologically-impacted buildings will be completed under CERCLA. Details for managing radiological building materials during demolition will be documented in work plans for regulatory agency review. Because this is not an issue affecting protectiveness but will require a post-ROD change to document the increased cost, Explanations of Significant Differences will be prepared for each Parcel, as appropriate.</u> Radiological retesting is planned and/or currently underway to verify that the <u>soil</u> RGs, which were determined to be protective and remain valid, have been met for each parcel that was identified in the Fourth Five-Year Review.</p> <p>Reference:</p> <p>Office of Community Investment and Infrastructure (OCII). 2022. Personal communication (letter) to Kimberly A. Ostrowski, Director, Naval Facilities Engineering Command, Base Realignment and Closure Program Management Office, West. <i>RE: Demolition of the Existing Non-Historic Buildings at the former Hunters Point Naval Shipyard in San Francisco, California.</i> February 3.</p>

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
9	Section 2.2 Site Inspections, pg. 2-1	<p>Please update the narrative to indicate a second site inspection was provided on January 23, 2024, specifically for the benefit of the FFA regulators and city representatives.</p> <p>Additional Comment Received 6/5/2024: EPA appreciates acknowledgement of the addition.</p>	This has been added.
10	Section 3.5.2.2	<p>HHRA Analysis, Former Parcel B, pg. 75; Section 4.5.2.2 HHRA Analysis, Former Parcel C, pg. 132; Section 5.5.2.2 HHRA Analysis, Former Parcel D, pg. 191; and Section 6.5.2 Question B, Parcels E and E-2, pg. 244</p> <p>The report contains vague references to changes in Construction Worker exposure scenario - <i>“There may be changes with HHRA analysis for the construction worker scenario.”</i> It is not clear specifically what change is being referred to. Please clarify in the draft final FYR.</p> <p>Additional Comment Received 6/5/2024: EPA appreciates the clarification.</p>	<p>The changes in the HHRA analysis for the construction worker would be associated with changes in construction worker exposure parameter values (such as skin surface area and body weight) and changes in toxicity values. Text in respective HHRA analyses (3.5.2.2, 4.5.2.2, and 5.5.2.2) has been added as follows:</p> <p>There may be changes with HHRA analysis for the construction worker scenario. <u>Changes in exposure parameter values would likely only result in a small change to HHRA results since standard construction worker exposure factors have not changed significantly since the RI was prepared (not orders of magnitude). The following construction worker exposure parameter values have changed since the original HHRA was prepared:</u></p> <ul style="list-style-type: none"> • <u>The construction worker body weight used in the HHRA was 70 kilograms; however, the adult body weight used in HHRA based on current USEPA guidance (USEPA, 2014) would be 80 kilograms.</u> • <u>The skin surface area for a construction worker exposed to soil used in the HHRA was 5,700 square centimeters (cm²); however, based on current USEPA guidance (USEPA, 2014), a construction worker skin surface area exposed to soil is 3,527 cm².</u> • <u>The soil-to-skin adherence factor used in the HHRA for a construction worker was 0.8 milligram per cm², where the soil-to-skin adherence factor for a construction worker used in a current HHRA would be 0.3 milligram per cm² (the 95th percentile adherence factor for construction workers [USEPA, 2004]).</u>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
			<ul style="list-style-type: none"> The skin surface area for exposure to groundwater used in the HHRA was 2,370 cm². A current HHRA would use a skin surface area of 6,032 cm² (the weighted average of mean values for head, hands, forearms, and lower legs [USEPA, 2011]). Additionally, for inhalation exposures for both groundwater and soil, inhalation toxicity values are now presented and used in milligram(s) per cubic meter (noncancer) or 1 microgram per cubic meter for cancer; therefore, the intake equations no longer incorporate inhalation rate. <p>Toxicity values could result in larger changes (potential orders of magnitude changes), such as for TCE, for which toxicity values were updated in 2009 after the initial HHRA was completed.</p> <p>References:</p> <p>USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July.</p> <p>USEPA, 2011. Exposure Factors Handbook: 2011 Edition. National Center for Environmental Assessment, Washington, DC; EPA/600/R-09/052F. September.</p> <p>USEPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 6.</p>
11	Section 3.7.3	Navy's Parcel B-2 Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 1 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)
12	Section 4.7.1	Navy's Parcel C, Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 2 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated April 30, 2024	Navy Response
Other Comments			
13	Section 6.7.1.2	Navy's Parcel E-2, Draft Protectiveness Determination – <i>Will Be Protective</i> EPA's Response – <i>Will Be Protective</i> , but additional actions are requested, as discussed above.	Comment acknowledged, see response to EPA Comment 3 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)

This page intentionally left blank.



July 19, 2024

Via email only; hardcopy not to follow

Department of the Navy
Naval Facilities Engineering Systems Command Southwest
Base Realignment and Closure
Program Management Office West
Attn: Michael Pound, BEC
33000 Nixie Way, Bldg 50, Second Floor
San Diego, CA 92147
michael.j.pound.civ@us.navy.mil

Re: U.S. EPA Response to the *Draft Final Fifth Five-Year Review Report*, Hunters Point Naval Shipyard, Electronically Transmitted by Navy on June 18, 2024

Dear Mr. Pound,

The U.S. Environmental Protection Agency ("EPA") response to the *Draft Final Fifth Five-Year Review Report*, Hunters Point Naval Shipyard, transmitted on June 18, 2024, is below and attached (Attachment 1). EPA appreciates the Navy's efforts to make the document available to both the Federal Facility Agreement (FFA) regulatory parties and to the public for early review and discussion. EPA also acknowledges the collective commitment of all FFA parties to work together to address issues, as appropriate and feasible, prior to the release of the final document.

Our review and response focus on the protectiveness statements and related action items/schedules for Protectiveness Deferred determinations. Any lack of EPA comment on the narrative/statements contained in this *Draft Final Fifth Five-Year Review Report* should not be construed as EPA agreement or concurrence.

07/19/2024

Summary of Differences Between Navy Draft Final Protectiveness Determinations and EPA Position

Parcel	Navy's Draft Final Protectiveness Determination	EPA's Position
E-2	Will Be Protective	Protectiveness Deferred

Please see response under Parcel E-2, Attachment 1.

We look forward to our upcoming discussion on July 23, prior to the Navy's release of the final Fifth Five-Year Review Report. Please feel free to contact me at (415) 972-3167.

Sincerely,

Andrew Bain
Lead Remedial Project Manager
Northern California Federal Facilities Section
Superfund Division

attachments

cc: with attachments
Mary Snow, S.F. Regional Water Board
Michael Howley, DTSC

Attachment 1

EPA Response

Draft Final Fifth Five-Year Review Report, Hunters Point Naval Shipyard
Electronically Transmitted by Navy on June 18, 2024

Our review and response focus on the protectiveness statements and related action items/schedules for Protectiveness Deferred determinations. Any lack of EPA comment on the narrative/statements contained in the Fifth Five-Year Report should not be construed as EPA agreement or concurrence.

Summary of Differences Between Navy Draft Final Protectiveness Determinations and EPA Position

Parcel	Navy's Draft Final Protectiveness Determination	EPA's Position
E-2	Will Be Protective	Protectiveness Deferred

1. Climate Resiliency Assessment

The Navy's revisions to prioritize the parcel-specific approach and timely characterization of the portions of the Site most likely to experience impacts first is appreciated. EPA has no further comment at this stage and for purposes of this Fifth Five-Year Review Report.

2. Five-Year Review Triggering Action Date and Due Date Is Not the Signature Date of the Fourth Five-Year Review Report

EPA's long-standing position is that the statutory due date for the Sixth Five-Year Review Report is November 8, 2028, which is not reflected in this Five-Year Review Report. If the Navy does not agree with EPA, we suggest our respective attorneys need to resolve this issue. In the interim, EPA's comment of 4/30/2024 and 6/4/2024 stand (attached).

3. Parcel B-2 Draft Final Protectiveness Determination for Groundwater; Actions and Associated Schedules Remain Protracted

In summary:

- a. EPA remains concerned that the Navy's efforts remain protracted, notwithstanding that the FFA regulatory parties raised the concern about mercury discharges to the Bay and the apparent failure of treatment several years ago. The tri-agency letter of November 23, 2021 (attached), stated "an indefinite period with no corrective action is

unacceptable to the FFA regulatory parties.” EPA continues to expect a final primary document, as initially committed to by the Navy, by July 31, 2025. EPA expects that in order to meet the deadline for the final, the Navy will appropriately plan for submission of a draft and a draft final, and appropriately plan for the minimum FFA review time frames for such draft (45 days + 30 day extension with notice) and draft final (30 days), in addition to the time frame the Navy will need to respond to comments and revise the document.

- b. EPA does not oppose any Navy attempt to optimize delivery of the ISS (e.g., use of a larger rig in areas of prior injection refusal) “as long as such action **is timely and completed prior to July 31, 2025**” (emphasis added), not October 31, 2025, the latter which the Navy incorrectly attributes to EPA.
- c. The final primary document due on July 31, 2025, must include additional treatment options that have been initially screened for further evaluation. In addition, the final primary document should evaluate all existing data to determine a path forward. Any attempt to optimize delivery of the ISS should be completed prior to delivery of the final primary document, as the Navy already indicated it would do the former (i.e., via bigger rig) several years ago. EPA rejects a final primary document whose sole goal is to propose methods to enhance ISS delivery. See d., below.
- d. EPA **does not agree** with the Navy’s “Path Forward – Parcel B-2, Installation Restoration (IR) Site 26,” dated June 2024 and presented at the June 13 Partnering Meeting (attached). This approach and schedule, which EPA rejects, does not appear to be reflected in the Draft Final Fifth Five-Year Review Report, but the Navy needs to confirm the latter in writing. EPA rejects a final primary document whose sole goal is to propose methods to enhance ISS delivery.
- e. As the FFA regulatory parties stated in the tri-agency letter of November 23, 2021, “the continued discharge of mercury without additional remediation prevents FFA regulatory party acceptance of a future IR 26 Remedial Action Completion Report (RACR) and timely transfer of the property, and poses an ongoing threat to human health and the environment and compliance concern for the regulators.”
- f. EPA notes that mercury concentrations do not appear to be on any clear downward trend (see EPA’s updated table, attached). The most recent concentration available to EPA for IR26MW49A is 5.55 ug/L and for IR26MW71A is 1.75 ug/L (PAL is 0.6 ug/L).
- g. The Navy’s proposed new Table 3-4 (comparison of groundwater quality parameters to Bay water quality parameters) appears very limited. A more appropriate place for the proposed table is the prospective primary document, not this Five-Year Review Report. This table is premature, warrants discussion with the FFA regulatory parties, and should be removed from this Five-Year Review Report.

- h. The Navy does not provide a reference, rationale, or relevance for the comparison to “10 times the 0.6 µg/L TL.” The Navy seems to be assuming, arbitrarily, a “dilution factor of 0.1.” This topic is more appropriately included in the prospective primary document, warrants discussion with the FFA regulatory parties, and should be removed from this Five-Year Review Report.
- i. EPA comments of 4/30/2024 and 6/4/2024 stand.
- j. The Navy needs to perform more robust quality assurance and quality control of its Five-Year Review Report before release to the FFA regulatory parties and the public.

4. Parcel C Draft Final Protectiveness Determination for Groundwater

- a. EPA appreciates the Navy’s efforts via the Parcel C Phase III RAWP, the Navy’s investigation of the deep F-WBZ, the latter in response to FFA regulatory party informal dispute, and the Navy’s previous agreement, as documented in the Phase III RAWP, to fully characterize the B-aquifer and the underlying upper F-WBZ. To the extent there is inadvertent discrepancy between this document and the Phase III RAWP and/or the deep F-WBZ RAWP, EPA expects the RAWPs and our associated comments to prevail.

EPA continues to expect that performance monitoring associated with the Parcel C RAWP, including the agreed to additional B-aquifer monitoring, can commence within approximately two years.

- b. As stated previously, EPA will not review or comment on the Navy’s “Water Board specific concerns” that the Navy inserted into its response to EPA’s comments. This should not be construed as EPA agreement or consensus.
- c. To help facilitate consistency, EPA’s comments of 4/30/2024 and 6/4/2024 stand.

5. Parcel E-2 Draft Final Protectiveness Determination; EPA Changing Its Position to Protectiveness Deferred

- a. As stated in our comments, and at the April 25, 2024, meeting, “it is EPA’s position that if the Navy is unable to agree to the timely analysis of existing Parcel E-2 groundwater data, EPA may need to consider the effect this may have on potential performance issues at Parcel E-2 and **our current protectiveness determination**” (emphasis added). After review of the *Draft Final Fifth Five-Year Review Report* (i.e., this document), EPA has concluded that the Navy has not agreed to timely analysis of existing Parcel E-2 groundwater data. Accordingly, EPA is changing its position to “Protectiveness Deferred.”
- b. EPA has stated that “it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant

concentration within the landfill, and potential impact on the San Francisco Bay.” The collection and analysis of data should not be deferred pending the completion of the remaining facilities, which do not appear to be particularly integral to landfill closure as it pertains to groundwater (e.g., wetlands, and landfill gas conveyance). As EPA stated, as part of the evaluation, the Navy must produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. EPA informally provided the Navy with a copy of “FFA Regulatory Party GWM Information and Analysis Minimum Needs From Navy, Parcel E-2” that will be attached to the forthcoming tri-agency letter referenced in EPA’s earlier comments and in discussions.

- c. EPA also stated that the FFA parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfalls. EPA informally provided the Navy with a copy of an Excel worksheet with the list of known (to the FFA regulatory parties) wells and the associated information needs that will be attached to the forthcoming tri-agency letter referenced in EPA’s earlier comments and in discussions. Directing the FFA regulatory parties to the BGMP (typically over 20,000 pages) is neither helpful nor responsive.
- d. The lack of appropriate data collection and analysis to evaluate the effect the landfill cap and slurry walls has on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay will delay FFA regulatory party acceptance of a future Remedial Action Completion Report (RACR) and the timely transfer of the property, poses an ongoing threat to human health and the environment, and raises compliance concerns for the regulators.
- e. Regarding methane exceedances, as the FFA regulatory parties have stated on numerous occasions, GMP-07A remains a compliance point until such time that the Navy amends, for FFA regulatory party review and comment, the appropriate primary document(s).
- f. On page xx, EPA does not agree that a memo to the file is an appropriate post-ROD documentation of the change. This topic warrants discussion with the FFA regulatory parties, and its inclusion in this Five-Year Review Report should not be construed as agreement or consensus.
- g. EPA comments of 4/30/2024 and 6/4/2024 stand.

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
1	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel B-2, IR-26, Protectiveness Determination	Based on treatment efficacy uncertainties associated with the treatment for mercury in groundwater and the potential ecological impact on the San Francisco Bay, EPA does not support the Navy's <i>Short-term Protective</i> determination. Because of this uncertainty, and the agreed-upon need to enhance treatment delivery and/or explore other treatment options, EPA supports a Protectiveness Deferred determination. A <i>Short-Term Protective</i> determination is not appropriate because the MetaFix treatment for mercury in groundwater is not achieving its performance goals at two monitoring well locations, IR26MW49A and IR26MW71A. EPA recognizes, as documented by the Navy, that MetaFix could not be injected at certain locations due to limitations of the injection method. At our April 25, 2024, meeting, the Federal Facility Agreement (FFA) Parties discussed whether the Navy continues its plan to implement the enhanced delivery of Metafix, although the FFA regulatory parties believe that other treatment options need to be explored. The Navy agreed that the final <i>Fifth Five-Year Review Report</i> will include a date to submit a new FFA primary document, such as a technical memorandum. EPA expects the new primary document will be submitted as soon as practicable, and well ahead of the next Five-Year Review. Among other things, the new primary document should evaluate and analyze all available mercury groundwater monitoring data, including data collected from March 2018 to September 2022, and mercury exceedances at IR26MW49A and IR26MW71A, and propose next steps, including additional treatment options (tri-Agency letter of November 23, 2021). If the Navy is unable to commit to develop and provide a primary document within a timeline	<p>From the Navy's perspective, there are multiple lines of evidence presented in the Five-Year Review that suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in the April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to "Protectiveness Deferred" determination. The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions need to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A technical memorandum primary document presenting the path forward will be prepared/finalized as soon as practicable and not later than July 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</u></p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows: <u>After completion of the 3-year post-ISS treatment performance monitoring, the FFA Regulatory</u></p>	<p>It is Navy's opinion, not necessarily shared by the FFA regulatory parties, that multiple lines of evidence are presented in the Five-Year Review that suggest the concentrations are unlikely to exceed 0.6 µg/L. A higher level of direct proof rather than indirect weight of evidence is needed to better determine impact to the Bay.</p> <p>At the April 25, 2024 meeting, the FFA regulatory parties, including EPA, expressed concern with a protracted Navy effort given the issue is over three years old. EPA expects that the Navy will complete the final primary document as soon as practicable and not later than the end of July 2025. The primary document must include additional treatment options that have been initially screened for further evaluation. EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing the primary document.</p> <p>Please cite the date of the letter (November 23, 2021) and do not attempt to interpret what is meant by the tri-agency letter. EPA quotes the letter directly.</p> <p>As discussed at the April 25, 2024 meeting, the FFA Regulatory Parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

**RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2
EPA's Suggested RLSO to Help Address our Concerns are in Blue**

No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		acceptable to the FFA regulatory parties, EPA may need to consider the effect that the continued lack of sufficient treatment performance, and groundwater mercury data and documentation may have on Parcel B-2.	<p><u>Parties/agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that "mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan." asserting that the remedy failed and was not protective of the Bay because of continuing exceedances of the trigger level (TL) (0.6 µg/L) at "sentinel" wells (IR26MW49A, IR26MW51A, and IR26MW71A) which are representative of a discharge to the Bay. Because the remedy did not achieve the 0.6 µg/L performance goal, the Agencies require that focused alternative treatments and treatment methodologies should be evaluated and, if warranted and accepted by the FFA regulatory parties, implemented (EPA, DTSC, and Regional Water Board, 2021).</u></p> <p><u>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to "optimize" ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA</u></p>	areas of prior injection refusal), and EPA does not oppose any Navy attempt to do so, as long as such action is timely and completed prior to July 31, 2025. However, as stated in the November 23, 2021 tri-agency letter, EPA continues to expect that additional treatment options need to be screened, evaluated and pursued by the Navy. The Navy needs to acknowledge this.

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</u></p> <p><u>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</u></p> <ul style="list-style-type: none"> <u>Completion of source removal in 2008 via a time-critical removal action (Insight, 2009)</u> <u>Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 locations to 2 and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-6. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL.</u> <u>The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances.</u> <u>Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water</u> 	<p>Please reflect this is the Navy's belief/perspective. It is not necessarily shared by the FFA Regulatory Parties.</p>

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water.</u></p> <p><u>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or additional reevaluation of remedial alternatives/treatment that have been screened for further evaluation are necessary to determine whether the remedy is protective of the Bay.</u></p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p> <p>3.5.1.3 Parcel B-2</p> <p>Yes. <u>The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L.</u> Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, <u>data are lacking that demonstrate mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L.</u> The RAO is stated as follows:</p> <p>... [no change from existing text]</p> <p>Protectiveness is not affected based on the following rationale: <u>Data at the groundwater-surface water interface has not been collected, however, from the Navy's perspective, it is not expected that mercury exceeds 0.6</u></p>	<p>The wording of what the Navy needs to do because of uncertainty is worded differently from that stated earlier (above). The wording needs to be consistent.</p> <p>Please reflect it is the Navy's belief/perspective (not the FFA Regulatory Parties) that mercury exceedances are not expected.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p><u>µg/L based on the following rationale:</u></p> <ul style="list-style-type: none"> Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009). Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996). Furthermore, mixing studies conducted by State of Washington, Department of 	

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023).</p> <ul style="list-style-type: none"> The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-6). Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in "sentinel" wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4). <p>Review of annual O&M inspections, historical documents... [no change from original text].</p>	
2	Five-Year Review Summary Form, Protectiveness Statements, page xix, Parcel C, B- aquifer, Protectiveness Determination	<p>This comment addresses the B-aquifer characterization. EPA does not support the Navy's draft <i>Short-term Protective</i> determination but rather a <i>Protectiveness Deferred</i> determination because from EPA's perspective, for groundwater, information has come to light that calls into question the protectiveness of the remedy (Question C of the Report), and more information is needed to determine protectiveness and whether an unacceptable risk exists.</p> <p>In general, both the A-aquifer and B-aquifer (and bedrock) groundwater flows towards the San Francisco Bay. The Navy's cross-sections in the RU-C2 area confirm there are gaps or</p>	<p>Navy acknowledges that while, <u>from the Navy's perspective</u>, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to "Protectiveness Deferred" until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep F-WBZ investigation for RU- C4 and the B-Aquifer <u>and Upper F-WBZ investigation for RU-C2 investigation</u>.</p>	<p>Please clarify that this is the Navy's belief/perspective, not necessarily that of the FFA Regulatory Parties.</p> <p>The Navy states that it "...will complete the Deep F-WBZ investigation for RU- C4 and the B-Aquifer investigation." This statement needs to clearly identify two separate investigations: the Deep F-WBZ investigation in RU-C4 (which is the subject of the Water Board/EPA Informal Dispute, and which is currently in the "Draft Final Work Plan" stage) and</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p>holes in the aquitard that enable communication between the A- and B-aquifers, and the Navy's data confirm there is contamination in the underlying B-aquifer at RU-C2 downgradient of the gaps or holes, and in the deep Fractured Water Bearing Zone (deep F-WBZ) at RU- C4. Consequently, the A-aquifer cannot be isolated as protective.</p> <p>In response to FFA regulatory concerns, the Navy has agreed to, but has not initiated, a full and timely characterization of the B-aquifer in the RU-C2 area, including the upper F-WBZ below and in contact with the B-aquifer. The Navy has also agreed to monitor B-aquifer wells as part of performance monitoring of the groundwater treatment of the A-aquifer at RU-C2 (RAWP Phase III). With respect to the Deep F-WBZ at RU-C4, which was the subject of an informal dispute brought by the Regional Water Quality Control Board and EPA, the Navy has submitted a draft workplan to fully characterize the nature and extent of contamination and groundwater flow patterns to the San Francisco Bay. The workplan has not been finalized and work has not yet commenced.</p> <p>For the Final <i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the full and timely characterization of the B-aquifer in the RU-C2 groundwater area, and the Navy's anticipated timeframe for developing these documents. An anticipated timeframe for the performance monitoring of the groundwater treatment at RU-C2 in both the A- and B-aquifers should also be provided. At the April 25, 2024, meeting, the Navy expressed agreement in concept that these commitments have been made. If the Navy is unable to commit to develop and provide the requested primary</p>	<p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the planned investigations <u>currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area</u> to address these data needs as follows:</p> <p><u>Yes. The following information has come to light that could question the protectiveness of the remedy:</u></p> <ul style="list-style-type: none"> <u>There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-Aquifer and Upper F-WBZ in RU-C2 are is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F- WBZ and unacceptable discharges to the Bay are not and will not occur.</u> <p>The Protectiveness Statement has been changed to:</p> <p><u>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B- aquifer present potential unacceptable risks to Bay receptors. In</u></p>	<p>the B-aquifer and underlying Upper F-WBZ in the RU-C2 area (still in development).</p> <p>The first component of the RU-C2 investigation has been agreed to by the Navy. The Navy has committed to collecting and evaluating B-aquifer data as part of the performance monitoring of the A-aquifer remedial action (as documented in the Navy's Response dated 2/8/24 to EPA's Item Nos. 1 and 2 dated 3/14/23 & 11/22/23 in Appendix H of the Final Parcel C Phase III Remedial Action at RUs C2 and C5, dated March 2024).</p> <p>The protectiveness statement does not include the development of a conceptual site model (CSM) of the A- and B-aquifers and shallow F-WBZ at RU-C2 and the deep F-WBZ at RU-C4. The statement should be revised to include the development of CSMs for both RU-C2 and RU-C4.</p> <p>As EPA discussed at the April 25, 2024 meeting, regarding RU-C2, the collection of B-aquifer and shallow F-WBZ data, as appropriate, should commence with the performance monitoring period, which EPA expects will be within the next two years.</p> <p>EPA also expects discussions among the FFA parties, as appropriate, prior to scoping and developing primary documents, such as workplans.</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		documents within a timeline acceptable to the FFA regulatory parties, EPA reserves its right to reassess our evaluation of B-aquifer and Deep F-WBZ groundwater at Parcel C.	order to make a protectiveness determination, the following action, <u>at a minimum, needs to be made:</u> complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, <u>as appropriate</u> , to assess potential impacts to Bay receptors. <u>For the Deep F-WBZ, a draft final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-Aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans. Depending on the results of data analyses, the development of conceptual site models, and necessary next steps, it is expected that these actions could possibly be completed within the next will take approximately 5 years, at which time, as appropriate, to complete, at which time a protectiveness determination will be made.</u>	
3	Five-Year Review Summary Form, Protectiveness Statements, page xxi, Parcel E-2, Protectiveness Determination	EPA agrees with the Navy's <i>Will Be Protective</i> determination, however, additional actions are requested in the Final <i>Fifth Five-Year Review Report</i> . For landfills of this nature, the presumptive remedy in both the CERCLA and RCRA programs is to "cap and contain the waste," and include appropriate environmental controls and monitoring for, at a minimum, stormwater, groundwater, and landfill gas. After a careful review and comparison of cleanup alternatives against EPA's nine evaluation criteria, the Parcel E-2 landfill ROD selected a remedy consistent with the presumptive remedy approach yet	<u>The Navy acknowledges that EPA agrees with the Will Be Protective determination, as long as the minimum information and analysis needs of the FFA Regulatory Parties, including the detailed status of all planned and installed wells, are provided on an agreed upon schedule with the caveats stated in this comment.</u> Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5) to document the Navy's commitment to	As stated in our comments and at the April 25, 2024 meeting, it is EPA's position that if the Navy is unable to agree to the timely analysis of existing Parcel E-2 groundwater data, EPA may need to consider the effect this may have on potential performance issues at Parcel E-2 and our current protectiveness determination. As discussed, most recently at the April 25, 2024, meeting, the Navy needs to amend the appropriate

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p>included several special design elements to account for the unique nature and location of this particular landfill. EPA agrees that Parcel E-2 is still undergoing remedy construction, including relatively minor work on the cover system, the completion of the landfill gas extraction and conveyance system, and the completion of the freshwater (FW) and tidal wetlands.</p> <p>Notwithstanding EPA's agreement that the remedy is still under construction, given that the Navy has deferred responding to Question A ("is the remedy functioning as intended by the decision documents?") in the Report, and given that certain fundamental landfill containment and control facilities, such as the nearshore slurry wall, the upland slurry wall, and the landfill cover system have been constructed, EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. For the Final</p>	<p>continue to construct the remedy as well as <u>evaluate analyze currently available performance data in a timely manner on a schedule agreed to among the FFA parties</u> for the remedy components that are in place. <u>As discussed at the April 24, 2024 meeting, the specific minimum information and analysis needs of the FFA Regulatory Parties, including a detailed status of all wells, are forthcoming in a tri-agency letter, after which the FFA parties will meet to discuss specific tasks and schedules. As discussed informally and in EPA's comments, the Navy recognizes that EPA expects the Navy will immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay:</u></p> <p><u>6.6.1.5 Parcel E-2 Other Findings</u></p> <p><u>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (e.g., Nearshore Slurry Wall and landfill cover). The following is a summary of the remaining RA work and interim studies planned prior to completing the RACR:</u></p> <ul style="list-style-type: none"> <u>Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018):</u> 	<p>primary document(s) to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. This is overdue and must be done as soon as practicable. We suggest the primary document(s) be identified and a draft schedule is developed for discussion with the FFA Regulatory Parties as soon as possible and not later than September 30, 2024. The Navy's informal exchange of one point of compliance with another, without amending the necessary primary document(s), is not acceptable.</p> <p>Our concerns stand and must be appropriately addressed:</p> <p>EPA has indicated that it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
		<p><i>Fifth Five-Year Review Report</i>, EPA requires a list of the primary documents that are anticipated to be developed to perform the evaluation work, and the Navy's anticipated timeframe for developing those documents. At the April 25, 2024, meeting, the Navy expressed agreement in concept but awaits further information from the FFA regulatory parties, which is forthcoming in a tri-Agency letter.</p> <p>If the Navy is unable to provide the required list and schedule in the Final <i>Fifth Five-Year Review Report</i>, EPA may need to consider the effect that the lack of sufficient groundwater data and documentation may have on potential performance issues at Parcel E-2.</p> <p>In addition, EPA has conveyed, most recently at the April 25, 2024, meeting, that the Navy needs to amend the appropriate primary document to change/replace an existing compliance point for monitoring methane, an explosive gas, at the facility property boundary. At the April 25 meeting, the Navy agreed in principle and will propose the primary document that must be amended and an anticipated timeframe for modifying that primary document.</p>	<ul style="list-style-type: none"> Landfill Gas System (Phase IVa) anticipated in <u>4/2025</u> Wetlands (Phase IVb) anticipated in <u>10/2027</u> Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as <u>at the new compliance point by preparing an addendum to revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than September 30, 2024. e the compliance monitoring and mitigation plan for methane at the landfill.</u> Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated in <u>12/2024</u> Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 6/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction RA Performance Report is anticipated in 3/2025. <p>Water Board specific concerns (See Water Board Protectiveness Determinations General Comment #3) and responses were added to the technical assessment for Parcel E-2 (Section 6.5.1, page 6-19) as follows: <u>While the remedy is currently under construction, Agency concerns have been raised regarding the completed</u></p>	<p>evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.</p> <p>Except as noted, below, EPA is not providing comment or response on the Navy's inclusion, under "Navy Response (May 2024)" pertaining to EPA's comments of 4/30/2024, of "Water Board specific concerns." Irrespective, EPA's responses of 6/4/2024 presented herein stand.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>components:</p> <ul style="list-style-type: none"> Concern: The Upland Slurry Wall was not installed as designed. <u>Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a "hanging wall" (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was determined to be bedrock which has a lower permeability than the surrounding aquifer material. A work plan is under Agency review to evaluate the Upland Slurry Wall performance and work is anticipated to begin in 2025.</u> Concern: The turbidity curtain was not used during remedy construction. <u>A 2,000-foot US Department of Transportation Type III offshore turbidity curtain was installed during shoreline work in accordance with the Design (ERRG, 2014) on November 30, 2016 as documented in the Phase II Remedial Action Construction Summary Report (Aptim, 2021). The turbidity curtain was removed after shoreline activities were completed, in accordance with the RAWP Appendix D, Environmental Protection Plan (CB&I, 2016) which states "During shoreline earthwork (revetment installation, wetlands excavation, and site grading), a turbidity curtain will be deployed as the BMP for sediment control."</u> 	

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<ul style="list-style-type: none"> Concern: The Navy has not provided all stormwater best practices documentation. The Navy has provided the following final primary documents that contain stormwater best practices: Remedial Action Work Plans (RAWPs) (CB&I, 2016; KEMRON, 2018), Stormwater Protection Plan (ref), stormwater best practices monitoring documentation during construction is provided in the Phase I RACR (Gilbane, 2018) and Phase II RACSR (Aptim, 2021) and will also be provided in the forthcoming Phase III RACSR (Pending). The Navy has also responded to the Water Board's December 3, 2022 and January 11, 2023 follow-up e-mail request for stormwater records. Concern: There is not adequate documentation that lead was removed from the wetland areas and groundwater may be affected in the future. Lead was removed from the tidal wetland areas in accordance with the Phase II RAWP (KEMRON, 2018) and subsequent Fieldwork Variance #5 (Appendix G of Aptim, 2021). Exceedances shown on Figures 6 and 7 of the RACSR (Aptim, 2021) were initial samples prior to over-excavation to remove lead- impacted soils, post-over-excavation samples were below the RG. Additionally, the landfill cap geomembrane and geosynthetic clay liner (GCL) layers prevent vertical infiltration of rainfall from reaching the underlying the landfill waste and promoting leachate. The Geocomposite drainage layer carries any flow that infiltrates through the vegetative layer to the perimeter ditches. The surface water from the eastern half of the 	

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>site will be collected by the eastern perimeter ditch and will drain directly into the Bay through the culvert pipe at the southeast corner of the site. The surface water from the western half of the site will be collected by the western perimeter ditch and will flow into the Freshwater Wetlands with excess runoff draining through the Freshwater Wetlands Outfall pipe into the Bay.</p> <p>The chemically contaminated soils near the Freshwater Wetlands were removed during previous hot spot excavations and excavations during Phase II subgrade preparations, with confirmation testing to show that they are below action limits in the FINAL RASCR (Figure 6 attached) for copper, lead, total PCBs, and total TPHs.</p> <p>There is no required tie into the underlying Bay Mud at the Wetlands Boundary. See Detail 4 on Design Drawing C18 from the DBR (attached) for the cover termination at the Wetlands boundaries.</p> <ul style="list-style-type: none"> Concern: There may be impacts to soil due to RCRA hazardous waste handling in stockpiles during remedy installation: Navy is planning, at agencies' request, to sample the soil under former Parcel E-2 stockpile locations now covered with radiological retesting radiological screening yard (RSY) pads for metals to confirm that the stockpiles didn't impact the soils around them during storm events. This will be completed after the RSY pads are removed. <p>The Navy understands that there is a pending data request and notes the following:</p>	<p>Regarding what the Navy notes, as stated at the April 25, 2024 meeting, the FFA Regulatory Parties expect</p>

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<ul style="list-style-type: none"> Groundwater elevations are available in the BGMP reports for all installed wells at Parcel E-2 COC data for A- and B-aquifers are available in the BGMP for all installed wells at Parcel E-2 Leachate testing is unavailable as the leachate ports have not yet been installed Extraction well data, french drain sample port data, freshwater wetland piezometer and wetland outfall data is not available because these components have not yet been installed Detailed plume and flow direction cannot be determined as the full monitoring well network has not been installed; However, groundwater modeling conducted during design planning supports the theoretical performance of the remedy. This is included in Appendix F of the RD (ERRG, 2014) <p>The Final RAWP (KEMRON, 2018) covers all the remaining remedy installation elements in the RD/ROD. The Final RAMP for Parcel E-2 (ERRG, 2014b) will be used to monitor the remedy once its installation is completed.</p> <p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15.</p> <p>ERRG, 2014b. Final Remedial Action Monitoring Plan, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. August 15.</p>	that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay. The Navy needs to collect and analyze groundwater elevations and water quality in both the A- and B-aquifers underlying the Parcel. The collection and more importantly the analysis of such data should not be deferred pending the completion of the remaining facilities. The FFA Parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfall. EPA also expects that as part of the evaluation, the Navy will produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers.

**U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023**

RTC Table 1 - Comments on the Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2 EPA's Suggested RLSO to Help Address our Concerns are in Blue				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
			<p>CB&I Federal Services, LLC. (CB&I). 2016. Work Plan Shoreline Revetment; Site Grading and Consolidation of Excavated Soil, Sediment, and Debris; and Upland Slurry Wall Installation Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. October 12.</p> <p>KEMRON Environmental Services (KEMRON). 2018. Remedial Action Work Plan, Final Cove, Wetlands, and Landfill Gas Control and Containment System, Remedial Action Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. December 26.</p> <p>Gilbane. 2018. Remedial Action Completion Report, Hot Spot Delineation and Excavation and Nearshore Slurry Wall Installation, Remedial Action, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. June.</p> <p>APTIM. 2021. Remedial Action Construction Summary Report, Parcel E-2 (Phase II), Hunters Point Naval Shipyard, CA. April 6</p>	

RTC Table 2 - Other Comments				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
11	Section 3.7.3	Navy's Parcel B-2 Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 1 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.
12	Section 4.7.1	Navy's Parcel C, Draft Protectiveness Determination – <i>Short-term Protective</i> EPA's Response – <i>Protectiveness Deferred</i> , as discussed above.	Comment acknowledged, see response to EPA Comment 2 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

U.S. EPA Response to Navy Draft RTCs (5-28-2024) U.S. EPA Comments (4-30-2024)
Draft Fifth Five-Year Review Report
Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

RTC Table 2 - Other Comments				
No.	Location	U.S. EPA Comment (4/30/2024)	Navy Response (May 2024)	U.S. EPA Response (6/4/2024)
13	Section 6.7.1.2	Navy's Parcel E-2, Draft Protectiveness Determination – <i>Will Be Protective</i> EPA's Response – <i>Will Be Protective</i> , but additional actions are requested, as discussed above.	Comment acknowledged, see response to EPA Comment 3 (Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2)	See EPA responses, above.



Department of Toxic Substances Control



November 23, 2021

Ms. Liz Roddy
Remedial Project Manager
NAVFAC BRAC PMO West
33000 Nixie Way
Bldg. 50, Floor 2
San Diego, CA 92147

Via e-mail only – hard copy not to follow

SUBJECT: Draft Final Remedial Action Construction Summary Report (RACSR), Parcel B-2 Installation Restoration (IR) Site 26, Groundwater Treatment (October 2021), Hunters Point Naval Shipyard, San Francisco; United States Environmental Protection Agency, California Department of Toxic Substances Control, and San Francisco Bay Regional Water Quality Control Board Reiteration of Position Letter on Ongoing, Unacceptable Mercury Discharges to the San Francisco Bay

Dear Ms. Roddy,

The United States Environmental Protection Agency (U.S. EPA), California Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (RB2) are in receipt of the subject RACSR.

We regret but understand that the Navy could not allow more time for review and coordination among the Federal Facility Agreement (FFA) regulatory parties (e-mails, attached). Irrespective, the united position of U.S. EPA, DTSC, and RB2 has not changed from our letter of August 20, 2021 (attached), and is summarized, below. The agencies have also supplemented (attached) our August 20, 2021 letter.

1. Mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) treatment has failed to minimize or prevent unacceptable discharge of mercury to San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan. An indefinite period with no corrective action is unacceptable to the FFA regulatory parties.

The continued discharge of mercury without additional remediation prevents FFA regulatory party acceptance of a future IR Site 26 Remedial Action Completion Report

November 23, 2021

(RACR) and timely transfer of the property, and poses an ongoing threat to human health and the environment and a compliance concern for the regulators.

2. It is of utmost importance to commence development of a new primary document work plan on focused alternative treatments and treatment methodologies.

The Record of Decision does not allow for continued groundwater monitoring to enable achievement of Remedial Action Objectives (RAOs) if the selected remedy is not successful. Although the FFA regulatory parties appreciate the Navy's attempt to propose potential mitigative options in its letter of October 25, 2021, as we stated in our attached e-mail of November 15, 2021, "we reaffirm the need for focused alternative treatments and treatment technologies (refer to our letter of August 20, 2021)." Without such alternatives analysis, the FFA regulatory parties may have no choice but to determine that the remedial action is *not* protective of human health and the environment, before or during the next five-year review scheduled in 2023.

3. It is not acceptable that the Navy continues to write the RACSR as if it were a RACR by including statements that the RAOs have been achieved or are being achieved. Irrespective of the Navy's disclaimer, the FFA regulatory parties reject the use of the RACSR to make claims on the operating or performance success of the remedial action. As the FFA regulatory parties have reiterated since the inception of the RACSR for Parcel E2 over a year ago, such statements are inappropriate for the RACSR which was understood to be a construction summary report that documents the remedy has been put into place. These RACSRs are misleading to the public and could confuse successor regulatory staff.

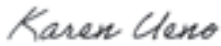
The FFA regulatory parties reject that the remedial action is successful, or has achieved or is making progress towards achieving the groundwater RAO. After an extended nearly 4-year performance and post-treatment monitoring period, the remedial action (the ISS treatment) has failed to minimize or prevent unacceptable discharges of mercury to San Francisco Bay.

Please also note that the decision to change the interim-RACR at IR Site 26 to a RACSR was made unilaterally by the Navy. If the Navy continues to use RACSRs as RACRs then such RACSRs are primary documents, not secondary documents, and must be acknowledged and treated as such.

November 23, 2021

The FFA regulatory parties look forward to a collaborative path with the Navy to begin scoping focused alternative treatments and treatment methodologies. Accordingly, we will be in contact after the holidays to schedule a meeting to discuss the development of a new primary document work plan.

Sincerely,



Karen Ueno
U.S. EPA
Region 9



Juanita Bacey
Berkeley Office
DTSC



Jeff White
SF Bay
RWQCB

Attachments

Cc with Attachments:

Mr. Derek Robinson, Navy BRAC PMO West
Ms. Brooks Pauly, Navy BRAC PMO West
Mr. David Tanouye, SF Bay RWQCB
Ms. Phyllis Flack, SF Bay RWQCB
Ms. Amy Brownell, City of SF

November 23, 2021

Attachments to EPA/DTSC/RB2 Letter of November 23, 2021
Draft Final Remedial Action Construction Summary Report (RACSR), Parcel B-2 Installation
Restoration Site 26, Groundwater Treatment (October 2021)
Hunters Point Naval Shipyard, San Francisco

November 23, 2021

Supplement to U.S. EPA/DTSC/RB2 Letter of August 20, 2021

1. The draft final RACSR continues to be written as a RACR by including statements demonstrating remedial action objectives are achieved or are being achieved, rather than as a construction summary report that demonstrates the remedial action has been put in place. This is misleading and unacceptable. The RACSR should not provide conclusions or opinions discussing achievement of goals or RAOs or operating performance success, as these should be discussed in a RACR. Some examples include the following.
 - a. Executive Summary - The first paragraph states that the objectives of this RACSR are to document the remedial action construction and the ongoing post-treatment groundwater monitoring activities. Page xiii states, “[a]ccording to post-treatment performance monitoring and ongoing BGMP monitoring results, dissolved mercury concentrations indicate that the groundwater remedy, GW-3A, for IR Site 26 is reducing the groundwater levels of mercury and progress is being made toward achieving the groundwater RAO of preventing or minimizing the migration of mercury to San Francisco Bay.” Notwithstanding the inappropriate insertion of such statement, the Navy’s data do not show any apparent decreasing trend and the Navy concludes that there are “no statistically definable trends.” Please also refer to our August 20, 2021 letter. Irrespective, references to achieving or progress in achieving goals or RAOs, or operating performance success are not appropriate for a RACSR, and all such references must be removed.
 - b. Executive Summary - References to ISS treatment success indicated on page xiv are not appropriate for a RACSR and must be removed.
2. All unsupported statements and implications must be removed from the RACSR. Some examples include the following.
 - a. Section 4.1.1 Dissolved Mercury – Implication that fluctuations of dissolved mercury in IR26MW71A may be related to localized releases of mercury present in native sediment.
 - b. Section 4.1.2.1.1 Sulfide - "An increase in the sulfide concentration was not observed in groundwater samples collected from the five performance monitoring wells in the first quarter following the injection, indicating that sulfide either is not being formed or is being formed but complexed with other chemical species in the subsurface environment and made undetectable by the analytical methods."
 - c. Section 4.1.2.2.1 Chloride - "Chloride informs the general site-specific reducing conditions but is not directly indicative of remedy performance. Higher chloride concentrations indicate reducing conditions."
 - d. Section 4.2.1 SEM/EDS Results - "The absence of mercuric sulfide minerals more strongly supports the hypothesis that mercury is likely being immobilized through direct adsorption onto iron sulfides or co-precipitation with iron oxides and iron oxyhydroxides following the oxidation of ZVI."
 - e. Section 5.1 Groundwater Monitoring – Statement that "[p]er the Amended Parcel B ROD chosen groundwater remedy, GW-3A, groundwater monitoring will continue until the RAO for mercury is met."

November 23, 2021

This is inaccurate and misleading. The ROD does not allow for continued groundwater monitoring to enable achievement of RAOs if the selected remedy is not successful. Moreover, the FFA regulatory parties have repeatedly stressed that this is not an acceptable option.

- f. All statements or implications that the remedial action has achieved or is making progress in achieving goals, RAOs, or operating performance.
3. Section 4.4 - Conclusions - Fluctuating mercury concentrations are not an indication that reduction of concentrations or mass in groundwater is occurring.
 4. Section 4.4 - Conclusion - The second to last paragraph states, “[i]n accordance with the chosen remedy GW-3A, groundwater monitoring will continue until the RAO's in the approved RODs are met.” This is inaccurate and misleading. The ROD does not allow for continued groundwater monitoring to enable achievement of RAOs if the selected remedy is not successful. Moreover, the FFA regulatory parties have repeatedly stressed that this is not an acceptable option.

The Navy’s data do not support any apparent decreasing trend and the Navy, itself, concludes that there are “no statistically definable trends.” Please also refer to our August 20, 2021 letter and No. 1, above.

5. Section 6.0 References - The references section should be revised to include all the references cited in the text.

November 23, 2021

From: Ueno, Karen

Sent: Friday, November 5, 2021 1:46 PM

To: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodgy3.civ@us.navy.mil>

Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; White, Jeff@Waterboards <jeff.white@waterboards.ca.gov>; Tanouye, David@Waterboards <david.tanouye@waterboards.ca.gov>

Subject: FFA Regulatory Party request for extension and proposed meeting with Navy - Draft IR-26 RACSR - Response to FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Dear Liz,

On behalf of the FFA Regulatory Parties (U.S. EPA, DTSC, and RB2) we appreciate the Navy's letter outlining the Navy's recommendations to address the agencies' long-standing concern regarding the failure of ISS treatment at IR-26. Although we reaffirm the need for focused alternative treatments and treatment technologies (refer to our letter of August 20, 2021), we think a meeting to better understand the Navy's three proposals is warranted. Aspects of the three options presented in the Navy's letter may prove useful during evaluation of remedial alternatives.

First, however, the FFA regulatory parties are requesting an approximate 60-day extension to January 27, 2022 to review the Navy's proposal, the draft RTCs, and, as appropriate, the Draft Final RACSR. We note that due to the Navy's extensions, review of these documents is now coincident with the holidays, and some of us are on extended leave during this period. Given leave schedules and the need for the agencies to coordinate amongst ourselves, we hope the Navy understands our request for more time. Accordingly, we also prefer that the RTCs and the RACSR are not finalized until after the extended review period.

Notwithstanding our request to extend the review period for these documents, to facilitate our review and comments, the FFA regulatory parties would like meet with the Navy to better understand the Navy's three proposals. Please let us know which of the following work for the Navy (Navy contractors are also invited) and we will set up such meeting:

Friday, December 3, between 1:00 – 3:00 pm

Tuesday, December 7, between 11:00 am- 1:00 pm

Wednesday, December 8, between 11:00 am - 1:00 pm

Thank you.

November 23, 2021

From: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodgy3.civ@us.navy.mil>
Sent: Monday, October 25, 2021 4:51 PM
To: Ueno, Karen <Ueno.Karen@epa.gov>
Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; White, Jeff@Waterboards <jeff.white@waterboards.ca.gov>; Tanouye, David@Waterboards <david.tanouye@waterboards.ca.gov>; 'Amy Brownell' <Amy.Brownell@sfdph.org>
Subject: Draft IR-26 RACSR - Response to FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Good Evening,

Thank you for sharing your comments and concerns in response to the Draft IR-26 Remedial Action Completion Summary Report. Over the last several months the Navy and other technical experts have evaluated your comments and developed a response letter in what we hope will help guide the discussion on a path forward for site closure at IR-26. The Navy team's earliest availability to meet will be the week of November 15th.

In addition we have provided response to comments, attached for your records. The Draft Final RACSR is scheduled for submittal electronically via email tomorrow, October 26th.

Thank you again for your continued support in moving this site toward successful remediation. Please let me know if you have any questions.

Very Respectfully,

Liz Roddy
Remedial Project Manager
NAVFAC BRAC PMO West
33000 Nixie Way
Bldg. 50, Floor 2
San Diego, CA 92147
(619) 524-5755
elizabeth.a.rodgy3.civ@us.navy.mil

November 23, 2021

From: Ueno, Karen <Ueno.Karen@epa.gov>

Sent: Friday, August 20, 2021 4:56 PM

To: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodny3.civ@us.navy.mil>

Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; White, Jeff@Waterboards <jeff.white@waterboards.ca.gov>; Tanouye, David@Waterboards <david.tanouye@waterboards.ca.gov>; 'Amy Brownell' <Amy.Brownell@sfdph.org>

Subject: [Non-DoD Source] Draft IR-26 RACSR - FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Dear Liz,

Thank you for sharing the draft IR-26 RACSR. Please see the attached position letter from the FFA regulatory parties concerning the continued discharge of mercury to SF Bay. In sum:

The ISS treatment has failed to minimize or prevent mercury migration to SF Bay and additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan. An indefinite monitoring period with no corrective action, as proposed by the Navy in the subject RACSR, will result in continued discharges of mercury to SF Bay at concentrations that are unacceptable to the FFA regulatory parties.

The continued discharge of mercury without additional remediation prevents FFA regulatory party acceptance of a future IR Site 26 RACR(s) and timely transfer of the property, and poses an ongoing threat to human health and the environment and a potential compliance concern for the regulators.

We look forward to working with you on our proposed path forward.

From: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodny3.civ@us.navy.mil>

Sent: Monday, November 15, 2021 3:00 PM

To: Ueno, Karen <Ueno.Karen@epa.gov>

Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; White, Jeff@Waterboards

November 23, 2021

<jeff.white@waterboards.ca.gov>; Tanouye, David@Waterboards

<david.tanouye@waterboards.ca.gov>

Subject: RE: FFA Regulatory Party request for extension and proposed meeting with Navy - Draft IR-26 RACSR - Response to FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Hello Karen,

The Navy is happy to meet with the FFA regulatory parties to discuss the three options presented in the Navy's letter dated October 25th, 2021. The Navy team will coordinate a meeting invite and send to all parties shortly falling on one of the three dates you've provided below.

In response to your request for a 60-day extension to review the Navy's proposal, the Draft RTCs and, as appropriate, the Draft Final RACSR, the Navy is unable to accommodate this request. Due to contractual constraints, the Navy cannot extend the period of performance (POP) for this contract task order any further. Previous delays in agreements to issue a RACR, which was later revised to a Draft RACSR, maximized the length of extensions for this particular contract. The current POP deadline is February 22nd, 2022. I understand the Holidays and leave schedules are the reason for the extension request. With that said, I am happy to discuss an alternative request for additional time to review the Draft Final RACSR and Draft RTCs that will accommodate the POP constraints. The current schedule for the Final RACSR is set for submittal on December 13th, 2021.

Please let me know if you have any questions.

Very Respectfully,

Liz Roddy
Remedial Project Manager
NAVFAC BRAC PMO West
33000 Nixie Way
Bldg. 50, Floor 2
San Diego, CA 92147
(619) 524-5755
elizabeth.a.rodgy3.civ@us.navy.mil

From: White, Jeff@Waterboards <Jeff.White@Waterboards.ca.gov>

Sent: Wednesday, November 17, 2021 10:49 AM

To: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodgy3.civ@us.navy.mil>; Ueno, Karen <Ueno.Karen@epa.gov>

Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; Tanouye, David@Waterboards <david.tanouye@waterboards.ca.gov>

November 23, 2021

Subject: RE: FFA Regulatory Party request for extension and proposed meeting with Navy - Draft IR-26 RACSR - Response to FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Hi Liz,

On behalf of the DTSC, EPA, and Regional Water Board, I am requesting an extension to January 11, 2022 (from December 13, 2021), to complete our review of the Draft Final RACSR. We are hoping that the extended, intermediate date of January 11, 2022 will help the Navy's contractor meet its obligations prior to expiration of the POP, as well as provide us with enough time to complete document review/comment. Holidays and leave make it difficult, if not impossible, for us to meet the December 13, 2021 deadline.

Also, we request that our meeting to discuss remedial alternatives and the options presented in the Navy's October 25, 2021 letter, be deferred until after our comments on the Draft Final RACSR have been submitted to and reviewed by the Navy. Deferring the meeting will help us complete our review of and comments on the RACSR. We look forward to meeting with you in January.

Thank you,
Jeff

From: Roddy, Elizabeth A CIV USN NAVFAC SW SAN CA (USA) <elizabeth.a.rodgy3.civ@us.navy.mil>
Sent: Thursday, November 18, 2021 6:06 PM
To: White, Jeff@Waterboards <jeff.white@waterboards.ca.gov>; Ueno, Karen <Ueno.Karen@epa.gov>
Cc: juanita.bacey@dtsc.ca.gov; Flack, Phyllis@Waterboards <phyllis.flack@waterboards.ca.gov>; Pauly, Brooks CIV USN BRAC PMO SAN CA (USA) <brooks.pauly2.civ@us.navy.mil>; Robinson, Derek J CIV USN NAVFAC SW SAN CA (USA) <derek.j.robinson1.civ@us.navy.mil>; Macchiarella, Thomas L CIV USN COMNAVFACENGCOM DC (USA) <thomas.l.macchiarella.civ@us.navy.mil>; Chesnutt, John <Chesnutt.John@epa.gov>; Walsh, Kimberly@DTSC <Kimberly.Walsh@dtsc.ca.gov>; King, Nathan@Waterboards <Nathan.King@waterboards.ca.gov>; Tanouye, David@Waterboards <david.tanouye@waterboards.ca.gov>
Subject: RE: FFA Regulatory Party request for extension and proposed meeting with Navy - Draft IR-26 RACSR - Response to FFA Regulatory Party position letter on continued mercury discharges to SF Bay

Hello Jeff,

After discussing the remaining timeline with our Contract Specialist and our Contractor, similar constraints due to the Holiday's and contract close out procedures present logistical challenges of our own. The Navy will proceed with current schedule for comment reviews due November 26th, 2021 and submitting the Final RACSR for IR-26 on December 13th, 2021.

The Navy can accept your request to postpone discussions on the Navy's proposed options for a path forward until after the Holidays. Please let me know if you have any additional questions.

Very Respectfully,

November 23, 2021

Liz Roddy
Remedial Project Manager
NAVFAC BRAC PMO West
33000 Nixie Way
Bldg. 50, Floor 2
San Diego, CA 92147
(619) 524-5755
elizabeth.a.rodgy3.civ@us.navy.mil



Department of Toxic Substances Control



August 20, 2021

Ms. Liz Roddy
Remedial Project Manager
NAVFAC BRAC PMO West
33000 Nixie Way
Bldg. 50, Floor 2
San Diego, CA 92147

Via electronic mail – hard copy not to follow

SUBJECT: Draft Remedial Action Construction Summary Report (RACSR), Parcel B-2 Installation Restoration Site 26, Groundwater Treatment (March 2021), Hunters Point Naval Shipyard, San Francisco; United States Environmental Protection Agency, California Department of Toxic Substances Control, and San Francisco Bay Regional Water Quality Control Board Position Letter on Ongoing Mercury Discharges to the San Francisco Bay

Dear Ms. Roddy,

The United States Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC) and San Francisco Bay Regional Water Quality Control Board (RB2) are in receipt of the subject RACSR. Because it is a document for Navy purposes that the Navy independently decided to issue, we only performed a quick perusal primarily to evaluate certain statements and/or conclusions that would necessitate reiterating, as we have done herein, our overarching position on the ongoing discharge of mercury to the San Francisco (SF) Bay.

While we appreciate the disclaimer that the RACSR is not a Remedial Action Completion Report (RACR), we are concerned that the Navy draws RACR-like conclusions that the in-situ stabilization (ISS) treatment remedial action is making progress “toward achieving the groundwater RAO of preventing or minimizing the migration of mercury to SF Bay” (Executive Summary), and the path forward is indefinite continuation of post-treatment monitoring rather than evaluating and implementing additional treatment options. A RACSR is not the appropriate vehicle to make such remedial action determinations.

The FFA regulatory parties reject that the remedial action is either successful or making progress in achieving the groundwater remedial action objective (RAO). After an extended nearly 3-year performance and post-treatment monitoring period, the remedial action

August 20, 2021

(the ISS treatment) has failed to reduce mercury in groundwater to concentrations below 0.6 micrograms per liter ($\mu\text{g/L}$), the Parcel B Remedial Design (RD) trigger level.

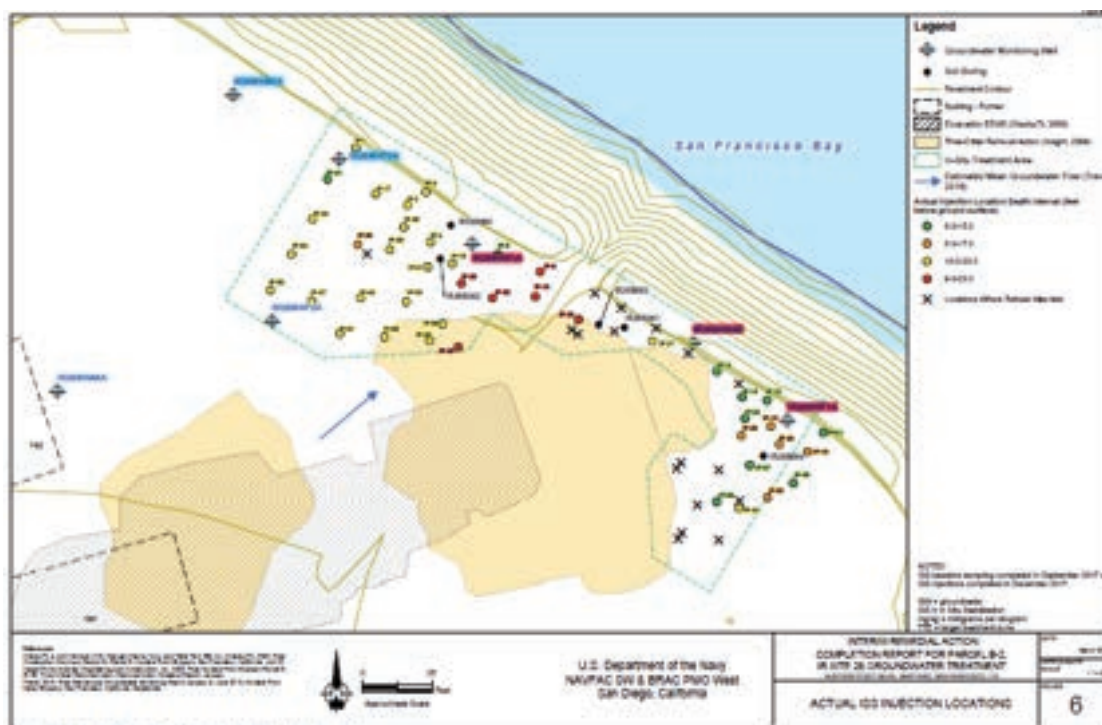
Our technical position and rationale on the remedial action (i.e., the ISS treatment) follow the brief background, below.

Background

According to the final *Work Plan for Parcel B-2, Installation Restoration Site 26 Groundwater Treatment, August 2017* (KMJV, 2017), the “primary objective of the groundwater treatment effort is to perform ISS of dissolved mercury to reduce mercury in groundwater at IR Site 26 to concentrations below the Parcel B Remedial Design (RD) trigger level of 0.6 micrograms per liter ($\mu\text{g/L}$).”

ISS treatment consisted of injecting Meta Fix compound into groundwater at select locations to “immobilize” mercury. Injections occurred in December 2017 at 43 of the planned 52 locations, with refusal reportedly preventing injection at 9 locations (see Figure 1, below). No alternative actions were proposed or taken to address areas where Meta Fix was not injected.

Figure 1: Meta Fix Injection and Rejection Locations (Source: Figure 6 Draft RACSR)



Data from five “sentinel” wells---IR26MW49A, IR26MW50A, IR26MW51A, IR26MW70A, IR26MW71A---that the Navy located and installed to determine the success of the ISS treatment (see Figure 2, below) were collected and presented in a Navy table (see Table

August 20, 2021

1, below) and time series plot (see Figure 3, below). Please note that the Figure 3 time series plot that the Navy provided (Source: *Summary of July through December 2020 Semiannual Groundwater Monitoring Data and Exceedances in Groundwater*, March 19, 2021) only includes data collected via the Basewide Groundwater Monitoring Program (BGMP) and not the data from the 4 quarters of performance monitoring. To facilitate viewing, we modified the original time series plot to only show the 5 “sentinel” wells.

Figure 2: “Sentinel” Wells (Source: Figure 4 Draft RACSR)



Table 1: Data Results for 5 Sentinel Wells Through September 2020 (Source: 03/09/2021 Email from Ms. Liz Roddy)

HPNS IR Site 26 Mercury Concentrations in Groundwater													
Sampling Event	Basewide Sept 2017	Baseline Sept 2017	Quarter 1 March 2018	Basewide Apr 2018	Quarter 2 June 2018	Basewide Sept 2018	Quarter 3 Sept 2018	Quarter 4 Dec 2018	BGMP Apr 2019	BGMP Sept 2019	BGMP June 2020*	BGMP Sept 2020	March 2021
Project Action Limit	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L
IR26MW40A	3.38 (0.585)	4.10	3.13 (4.8)	4.77 J (4.14)	6.36	6.95 J (4.65)	7.18	4.99	1.01 (1.47)	3.45	0.494 J	2.38	Pending
IR26MW50A	0.5 U	0.100 U	0.5 U	0.1 U	0.100 U	0.100 U	0.100 U	0.100 U	0.1 U	0.2 U	0.2 U	0.2 U	Pending
IR26MW51A	6.945	1.74	0.5 U	0.092 J	0.1 U (0.1 U)	0.0580 U	0.1 U	1.66	0.1 U	0.2 U	0.2 U	0.2 U	Pending
IR26MW70A	NS	0.156 U (0.142 U)	0.5 U	NS	0.1 U	NS	0.1 U (0.1 U)	0.1 U	0.1 U	0.2 U (0.2 U)	0.2 U (0.2 U)	0.2 U	Pending
IR26MW71A	NS	4.09	0.5 U	NS	8.55	0.343 J	0.12 J	3.6 (2.88)	0.15	0.194 J	1.72	1.47 (2.81)	Pending

Notes:

All results from analysis using U.S. EPA Method 7470A for comparison.

All results in micrograms per liter.

Bold = result exceeds project action limit.

U = analyte not detected at or above given detection limit.

J = estimated value.

NS = not sampled.

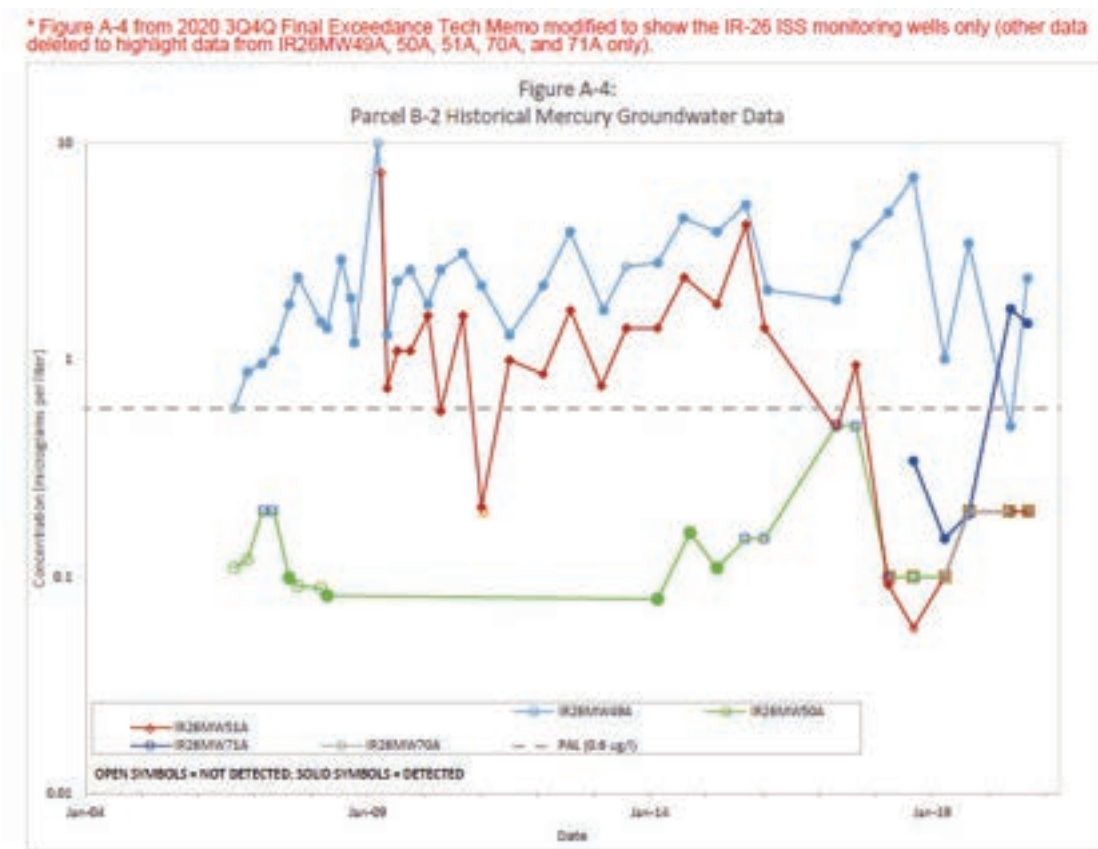
BGMP = Basewide Groundwater Monitoring Program.

HPNS = Hunters Point Naval Shipyard.

Results in parentheses are duplicates.

August 20, 2021

Figure 3: Time Series Plot of BGMP Data for 5 “Sentinel” Wells (Source: Figure A-4, *Summary of July through December 2020 Semiannual Groundwater Monitoring Data and Exceedances in Groundwater, March 19, 2021*)



Technical Position of EPA, DTSC, RB2

1. The ISS treatment has failed to minimize or prevent mercury migration to SF Bay and additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan. An indefinite monitoring period with no corrective action, as proposed by the Navy in the subject RACSR, will result in continued discharges of mercury to SF Bay at concentrations that are unacceptable to the FFA regulatory parties.

The continued discharge of mercury without additional remediation prevents FFA regulatory party acceptance of a future IR Site 26 RACR(s) and timely transfer of the property, and poses an ongoing threat to human health and the environment and a potential compliance concern for the regulators.

2. Despite over 10 post-treatment monitoring events (results from an 11th event are pending) over nearly three years, concentrations of dissolved mercury are not below or consistently

August 20, 2021

below the Parcel B RD trigger level of 0.6 µg/L at 3 of the 5 “sentinel” well locations---namely, at IR26MW49A, IR26MW51A, and IR26MW71A. Specifically, IR26MW49A has exceedances in 9 out of 10 post-treatment monitoring events; IR26MW51A has a troubling unexplained spike back up to the baseline level approximately midway in the post-treatment monitoring; and IR26MW71A has exceedances in 4 out of 9 post-treatment monitoring events, including in the two most recent events reported.

These data neither demonstrate success of the ISS treatment nor that the ISS is minimizing or preventing mercury migration to SF Bay. Moreover, as stated in the RACSR (Section 4), “tidal influence was not included as part of the groundwater study for the treatment of mercury concentrations at IR Site 26. However, it was observed that mercury concentrations fluctuated in groundwater samples collected from site monitoring wells.” The RACSR provides a summary of the tidal status for the samples collected during the baseline and four quarterly events (but not for the samples collected via the BGMP), however it fails to evaluate whether or how mercury concentrations may be affected by differences in collection times (e.g., during low or high tides) and does not provide a recommendation for the BGMP to collect monitoring samples at consistent and optimal tidal cycles. As such, there are significant comparability and representativeness issues with these data and thus with the conclusions made on the effectiveness of treatment.

In sum, the ISS treatment has failed as a treatment technology to achieve the desired results. See Figure 2, Table 1, and Figure 3 presented again, below, for convenience.

Figure 2: “Sentinel” Wells (Source: Figure 4 Draft RACSR); IR26MW49A, IR26MW51A, and IR26MW71A in red



August 20, 2021

Table 1: Data Results for 5 Sentinel Wells Through September 2020 (Source: 03/09/2021 email from Ms. Liz Roddy); IR26MW49A, IR26MW51A, and IR26MW71A in shaded rows

HPNS IR Site 26 Mercury Concentrations in Groundwater													
Sampling Event	Basewide Sept 2017	Baseline Sept 2017	Quarter 1 March 2018	Basewide Apr 2018	Quarter 2 June 2018	Basewide Sept 2018	Quarter 3 Sept 2018	Quarter 4 Dec 2018	BGMP Apr 2019	BGMP Sept 2019	BGMP June 2020*	BGMP Sept 2020	March 2021
Project Action Limit	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L
IR26MW49A	3.38 (0.585)	4.10	3.13 (4.8)	4.77 J (4.14)	6.36	6.95 J (4.65)	7.18	4.99	1.61 (1.47)	3.45	0.494 J	2.38	Pending
IR26MW50A	0.5 U	0.100 U	0.5 U	0.1 U	0.100 U	0.100 U	0.100 U	0.100 U	0.1 U	0.2 U	0.2 U	0.2 U	Pending
IR26MW51A	6.945	1.74	0.5 U	0.062 J	0.1 U (0.1 U)	0.0580 U	0.1 U	1.66	0.1 U	0.3 U	0.3 U	0.2 U	Pending
IR26MW70A	NS	0.156 U (0.142 U)	0.5 U	NS	0.1 U	NS	0.1 U (0.1 U)	0.1 U	0.1 U	0.2 U (0.2 U)	0.2 U (0.2 U)	0.2 U	Pending
IR26MW71A	NS	4.09	0.5 U	NS	8.65	0.343 J	0.12 J	2.6 (2.88)	0.15	0.194 J	1.72	1.47 (2.81)	Pending

Notes:

All results from analysis using U.S. EPA Method 7475A for comparison.

All results in micrograms per liter.

Bold = result exceeds project action limit.

U = analyte not detected at or above given detection limit.

J = estimated value.

NS = not sampled.

BGMP = Basewide Groundwater Monitoring Program.

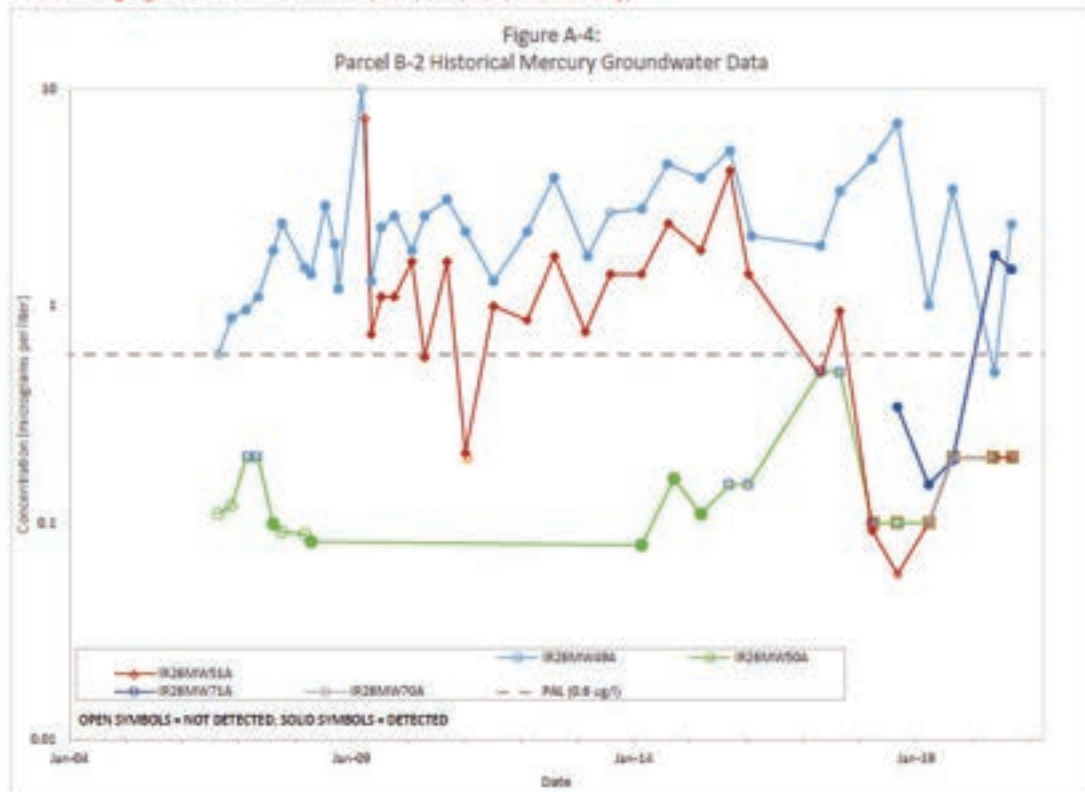
HPNS = Hunters Point Naval Shipyard.

Results in parentheses are duplicates.

Figure 3: Time Series Plot of BGMP Data for 5 “Sentinel” Wells (Source: Figure A-4, *Summary of July through December 2020 Semiannual Groundwater Monitoring Data and Exceedances in Groundwater, March 19, 2021*)

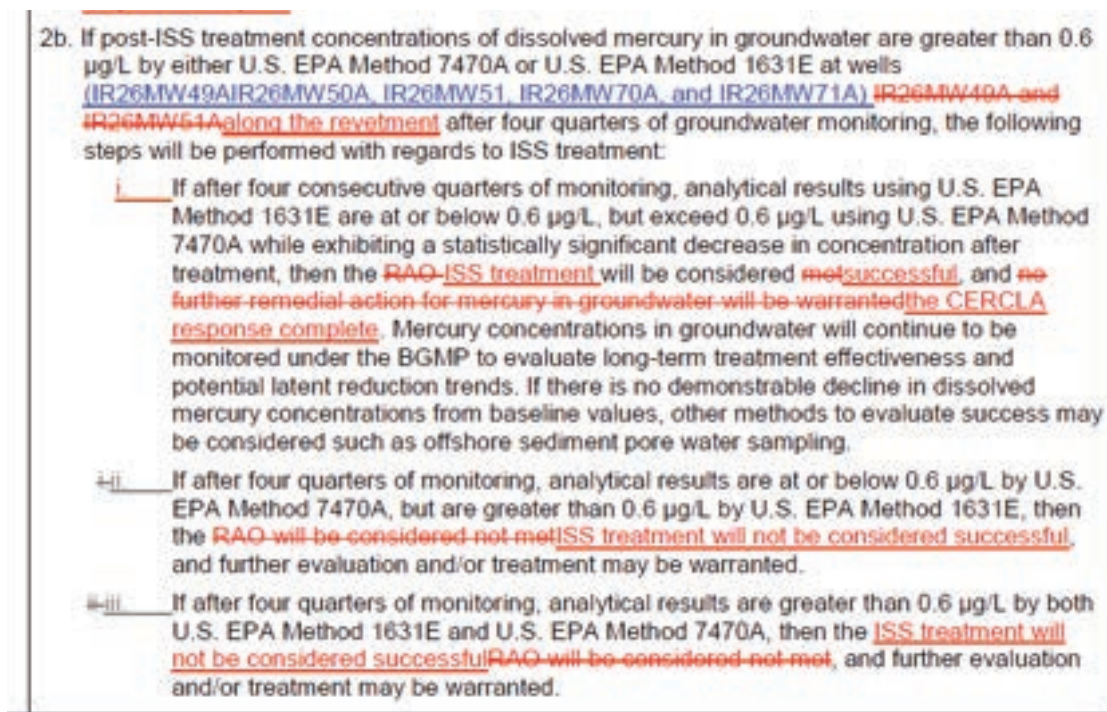
IR26MW49A (light blue), IR26MW51A (red), and IR26MW71A (dark blue)

* Figure A-4 from 2020 3Q4Q Final Exceedance Tech Memo modified to show the IR-26 ISS monitoring wells only (other data deleted to highlight data from IR26MW49A, 50A, 51A, 70A, and 71A only).



August 20, 2021

3. The Navy's RACSR definition of "success" and decision not to pursue additional treatment do not comport with the Navy's own *Final Work Plan for Parcel B-2, Installation Restoration Site 26 Groundwater Treatment, August 2017- Project-Specific Sampling and Analysis Plan Parcel B-2, IR Site 26 Groundwater Treatment* (redline final of Sampling and Analysis Plan Worksheet #11, Step 5, excerpted below) which states the following:



In accordance with the Navy's own protocol, above, the ISS treatment has not proven successful and "further evaluation and/or treatment may be warranted."

4. It seems unlikely that mercury concentrations will further decrease as a result of Metafix, especially given the potential tidal flushing in the "sentinel" monitoring wells. The same 2017 final work plan (Section 3.3.3) referenced above states that "[f]ollowing ISS treatment, the anticipated duration to remove mercury from groundwater by precipitating mercury sulfide minerals is one to three months (Bower et al., 2008; Devasena et al., 2013; Xiong et al., 2009)." There have been nearly 36 months of post-treatment monitoring.
5. The ISS treatment has not achieved success in nearly three years (36 months) of post-treatment monitoring and therefore, focused alternative treatments and treatment methodologies should be evaluated and, if warranted and accepted by the FFA regulatory parties, implemented. In sum, the CERCLA path forward towards a RACR is to initiate a new primary document work plan to evaluate and implement alternative treatment options and treatment methodologies. The remedial action has not been shown to be successful or protective.

August 20, 2021


6. The RACSR makes unsubstantiated claims about the results of the Mann-Kendall test to support its determination of the success of the ISS treatment and decision not to pursue additional treatment options. According to the RACSR (Section 4), "[t]he Mann-Kendall test is a trend estimator that is specifically recommended for environmental data," and the Navy uses this test to conclude, "[f]or IR26MW49A, Mann-Kendall analysis indicated a decreasing trend in dissolved mercury concentrations. For IR26MW71A, insufficient evidence of a trend was indicated."
- a. Per the ProUCL 5.1 Technical Guide (EPA, 2015), "...trend tests correcting for seasonal/spatial variations and geostatistical methods are not available in the ProUCL software. For those methods, the user is referred to commercial software packages such as SAS®." Because samples were not consistently collected at low-low tide (i.e., the likely worst-case condition), the dataset used to conclude that there is a decreasing trend at IR26MW49A has an unknown source of variation, and the conclusion made for the trend at IR26MW49A using ProUCL software is not valid.
 - b. The samples collected at high and low tide may not be comparable. These data need to be parsed and evaluated separately. If the BGMP data are used, then the tidal status of these data needs to be determined and parsed into the appropriate group of low or high tide datasets. (Note: Subdivisions of high and low tides include high-low and low-high creating 4 daily cycle components in total.)
 - c. *A study that includes collection of dissolved mercury at low and high tides within the same day needs to be performed to evaluate whether there is a tidal effect on the concentrations of mercury.*
7. Because this letter states *our position* on the ongoing discharge of mercury to the SF Bay, we request that your contractor does not respond to this position letter. Rather, we would appreciate that this letter is attached to your final RACSR document. At a minimum, it should be included in your administrative record.
8. It is of utmost importance to commence discussion on the development of a new primary document work plan on focused alternative treatments and treatment methodologies. *Unmitigated discharge of mercury to SF Bay cannot continue.*

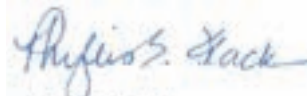
EPA, DTSC, and RB2 look forward to continuing a collaborative path forward with the Navy. We will be in contact in the coming weeks to schedule a meeting to discuss and initiate scoping of a new primary document work plan.

Sincerely,



Karen Ueno
U.S. EPA
Region 9


 Juanita Bacey
Berkeley Office
DTSC


 Phyllis Flack
SF Bay
RWQCB

August 20, 2021

Cc:

Mr. Derek Robinson, Navy BRAC PMO West
Ms. Brooks Pauly, Navy BRAC PMO West
Mr. Thomas Macchiarella, Navy BRAC PMO West
Mr. John Chesnutt, US EPA
Ms. Kim Walsh, DTSC
Mr. Nathan King, SF Bay RWQCB
Mr. David Tanouye, SF Bay RWQCB
Ms. Amy Brownell, City of SF Department of Public Health

This page intentionally left blank.



Path Forward

**Parcel B-2, Installation Restoration (IR) Site 26
Former Hunters Point Naval Shipyard (HPNS)
San Francisco, California**

**Base Realignment and Closure (BRAC) Cleanup Team (BCT) Meeting
June 2024**

Meeting Objectives



- Review historical remedial actions
- Previous RA constraints of *in-situ* groundwater treatment at IR Site 26
- Proposed RA Path Forward
- Share IR Site 26 timeline for proposed remedial action
- Agency feedback on timeline and proposed remedial action

BRAC Program Management Office

ROD Amendment for IR Site 26 (Navy, 2009)



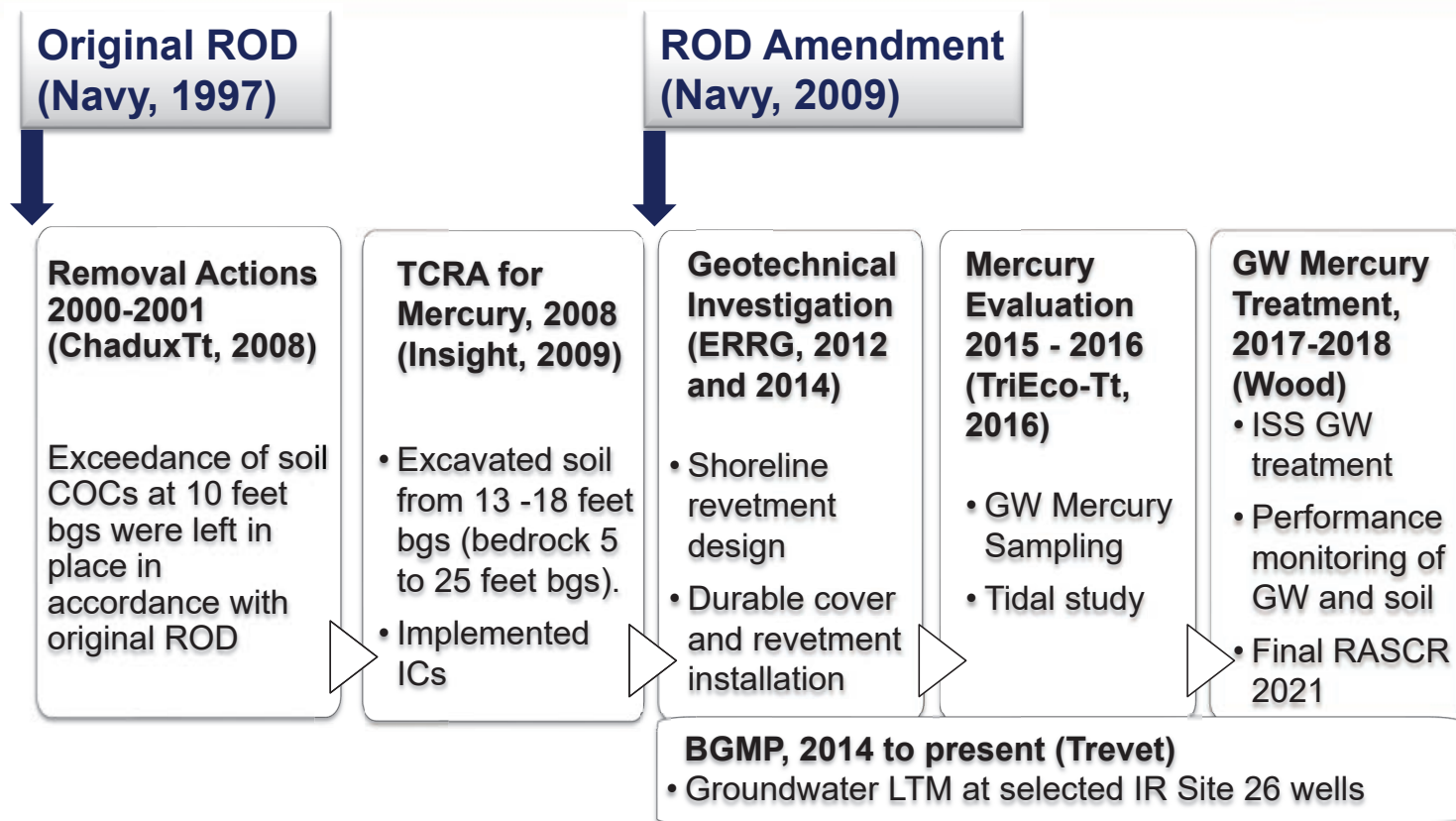
Remedial Action Objective (RAO)

“Prevent or minimize migration to the surface water of San Francisco Bay of chromium VI, copper, lead, and mercury in the A-aquifer groundwater that would result in concentrations of chromium VI above 50 µg/L, copper above 28.04 µg/L, lead above 14.44 µg/L, and mercury above 0.6 µg/L in the surface water of San Francisco Bay. This RAO is intended to protect the beneficial uses of the bay, including ecological receptors.”

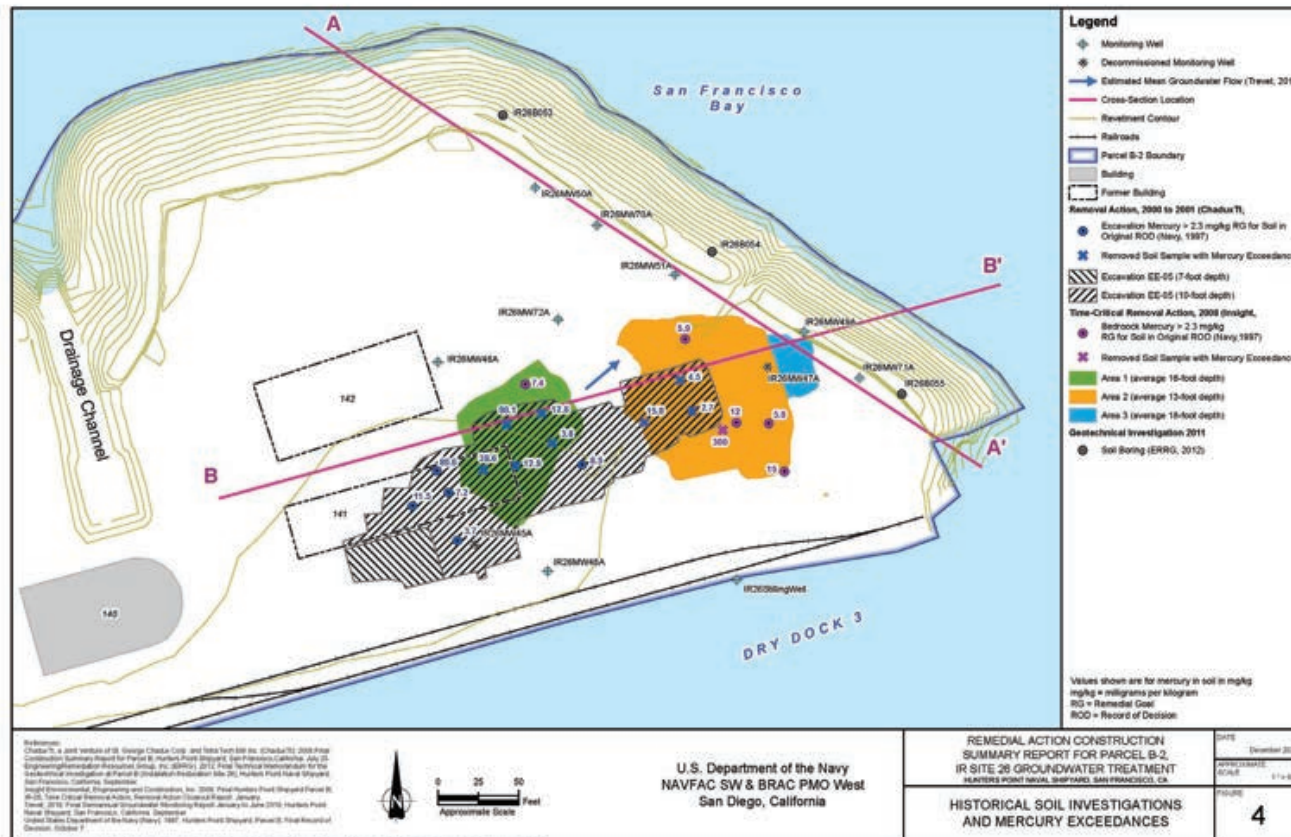
Selected Remedy for groundwater:

Alternative GW-3A: (1) in situ groundwater treatment using biodegradation substrate, (2) groundwater monitoring, and (3) ICs

Timeline of Navy Decision Documents and Investigations at IR Site 26



Remedial Actions(Source Removal) at IR Site 26 (2000-2009)

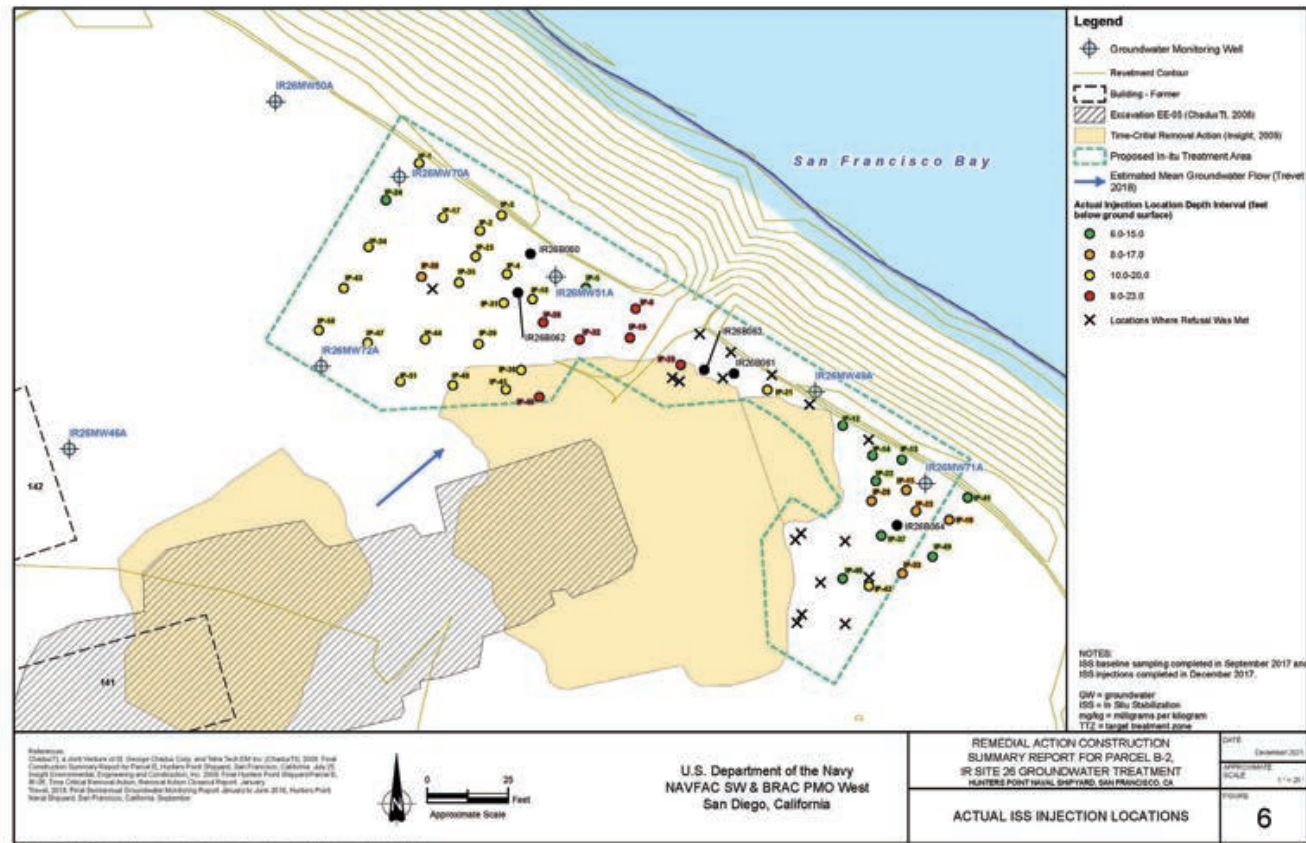


BRAC Program Management Office

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

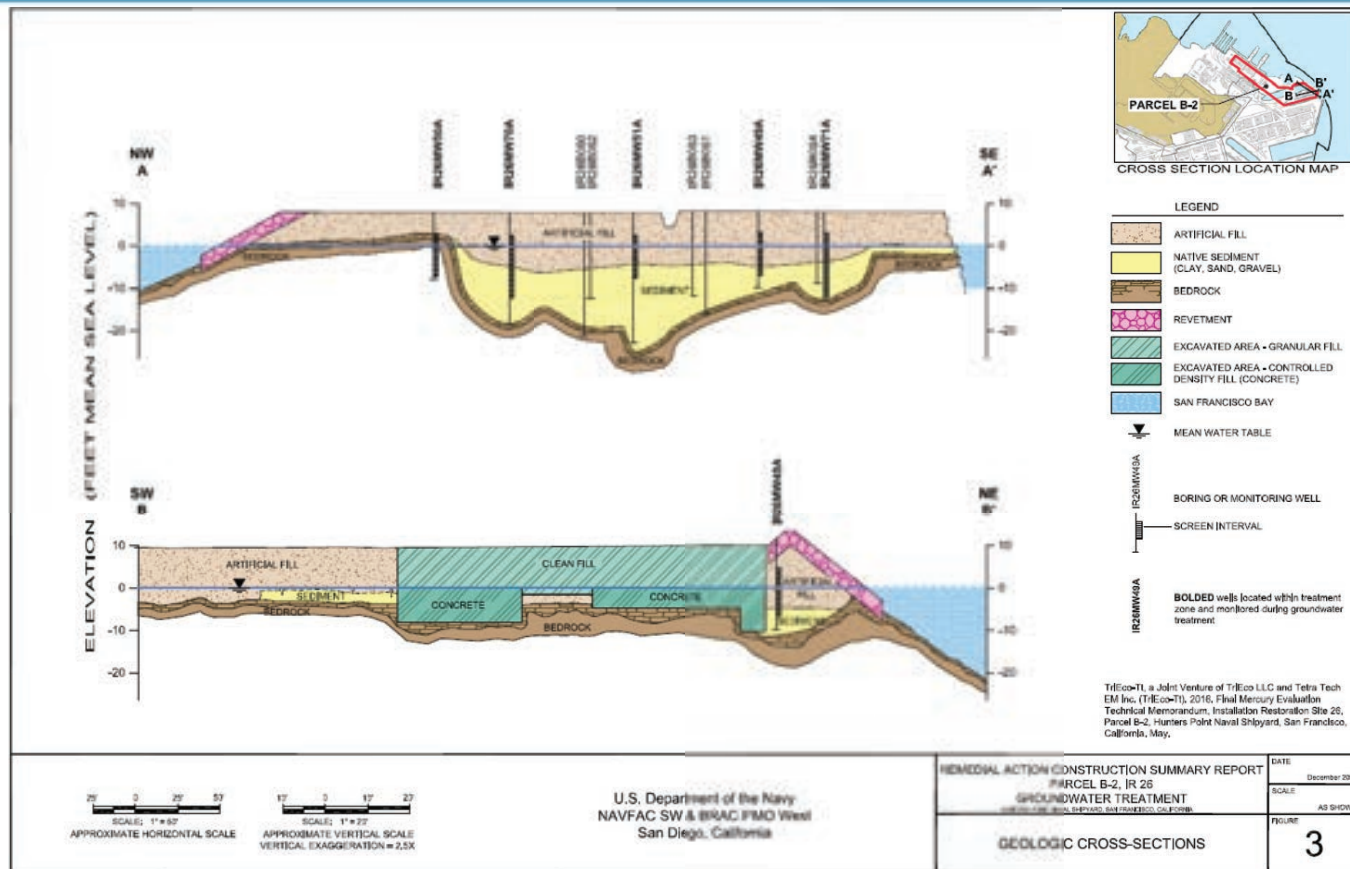
APPENDIX I

Remedial Actions and Investigations at IR Site 26 (2000-2018)



BRAC Program Management Office

Remedial Actions(Source Removal) at IR Site 26 (2000-2009)



BRAC Program Management Office

Technical Constraints



1. Injections were refused in area near the shoreline wells, likely due to Controlled Density Fill (CDF) footprint extending beyond the estimated plan view boundaries, or subsurface cobbles and riprap near the shoreline.
2. Large area to the West covered by an impermeable layer as seen in the tan shaded areas and black hashed areas on previous slide



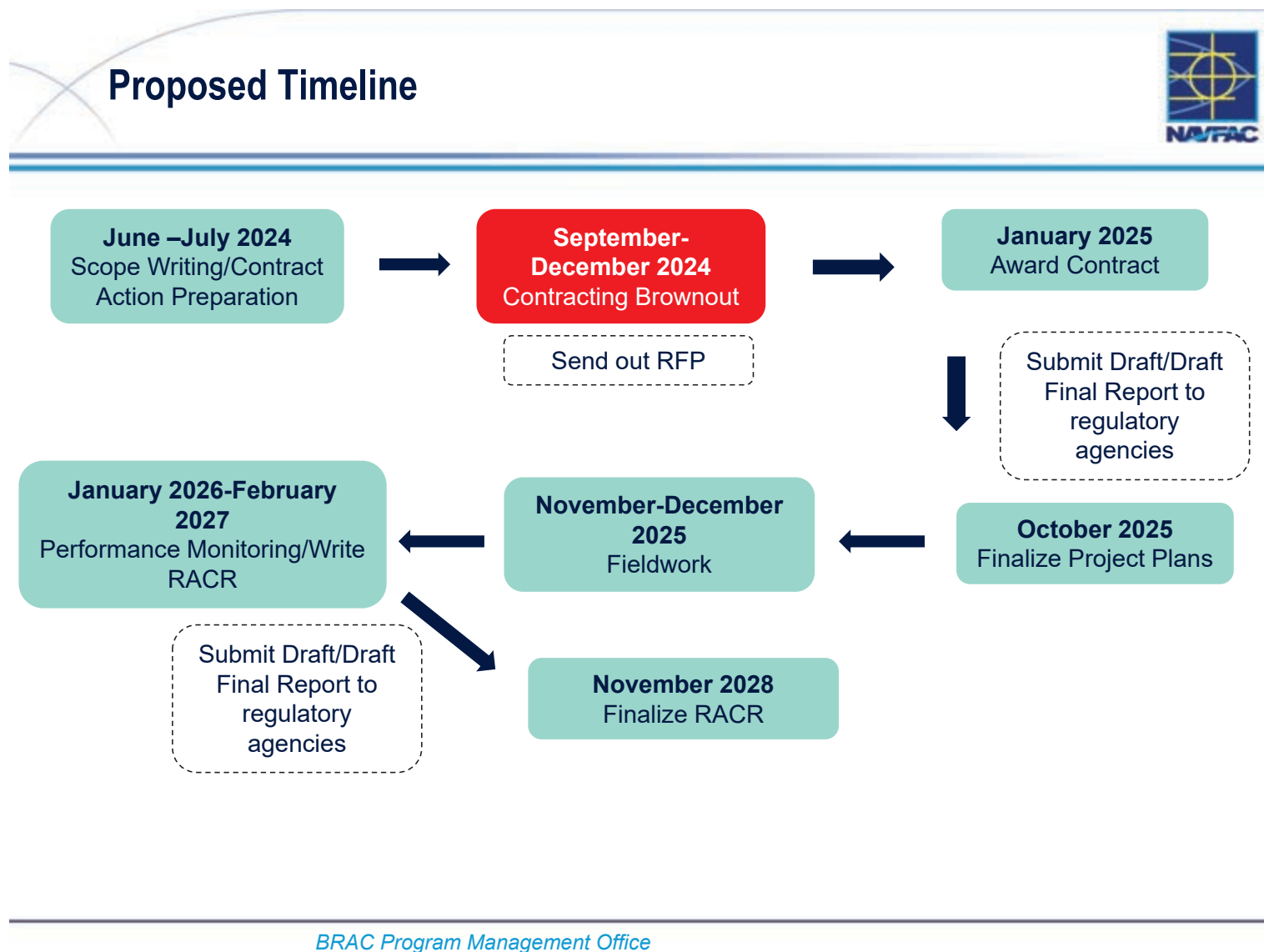
Photo taken at 1426 hrs by Robert Castaneda. Northeast view photo showing stockpiles of rock removed from the Area 2 excavation.

Proposed RA Path Forward



- Mitigate dissolved Hg through targeted *in-situ* injections in the vicinity of IR26MW49A and -71A
- Metafix must come in direct contact with dissolved mercury to absorb it (ROI less than 7.5-feet). Prior Radius of Influence near monitoring wells:
 - IR26MW49A ~15-feet
 - IR26MW71A ~14-feet
- Previous injections were too shallow due to refusal; ensure targeted depths are met near sediment/bedrock contact
- Metafix injections were effective in locations where injections were successfully accomplished
- Quarterly performance monitoring at select wells and follow-on BGMP

BRAC Program Management Office



FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I



Questions? Comments?

BRAC Program Management Office

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

HPNS IR Site 26 Mercury Concentrations in Groundwater													Data Appended to Original Table			
Sampling Event	Basewide Sept 2017	Baseline Sept 2017	Quarter 1 March 2018	Basewide Apr 2018	Quarter 2 June 2018	Basewide Sept 2018	Quarter 3 Sept 2018	Quarter 4 Dec 2018	BGMP Apr 2019	BGMP Sept 2019	BGMP June 2020*	BGMP Sept 2020	BGMP March 2021	BGMP Sept 2021	BGMP March 2022	BGMP Sept 2022
Project Action Limit	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L	0.6 ug/L
IR26MW49A	3.38 (0.585)	4.10	3.13 (4.8)	4.77 J (4.14)	6.36	6.95 J (4.65)	7.18	4.99	1.01 (1.47)	3.45	0.494 J	2.38	0.283 J (2.16)	3.57	1.79 (1.4)	5.55
IR26MW50A	0.5 U	0.100 U	0.5 U	0.1 U	0.100 U	0.100 U	0.100 U	0.100 U	0.1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
IR26MW51A	0.945	1.74	0.5 U	0.092 J	0.1 U (0.1 U)	0.0580 U	0.1 U	1.66	0.1 U	0.2 U	0.2 U	0.2 U	0.156 J	0.2 U	0.2 U	0.2 U
IR26MW70A	NS	0.156 U (0.142 U)	0.5 U	NS	0.1 U	NS	0.1 U (0.1 U)	0.1 U	0.1 U	0.2 U (0.2 U)	0.2 U (0.2 U)	0.2 UJ	0.2 U	0.2 U (0.2 U)	1.0 U	0.2 U (0.2 U)
IR26MW71A	NS	4.09	0.5 U	NS	8.55	0.343 J	0.12 J	2.6 (2.58)	0.15	0.194 J	1.72	1.47 (2.81)	1.26	5.0	1.18	1.75

Notes:

All results from analysis using U.S. EPA Method 7470A for comparison

All results in micrograms per liter

Bold = result exceeds project action limit

U = analyte not detected at or above given detection limit

J = estimated value

NS = not sampled

BGMP = Basewide Groundwater Monitoring Program

HPNS = Hunters Point Naval Shipyard

Results in parentheses are duplicates.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930		Responses By Navy					
Comment By Andrew Bain		Code/Organization Northern California Federal Facilities Section, Superfund Division, EPA Region 9			Date July 2024				
Project Title and Location Draft-Final Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, June 18, 2024					<table border="1"> <tr> <th>Type of Review</th> </tr> <tr> <td>X Draft-Final</td> </tr> <tr> <td>Final</td> </tr> <tr> <td>Other</td> </tr> </table>	Type of Review	X Draft-Final	Final	Other
Type of Review									
X Draft-Final									
Final									
Other									

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
1	Climate Resiliency Assessment, Appendix A	The Navy's revisions to prioritize the parcel-specific approach and timely characterization of the portions of the Site most likely to experience impacts first is appreciated. EPA has no further comment at this stage and for purposes of this Fifth Five-Year Review Report.	Comment acknowledged.
2	--	<p><u>Five-Year Review Triggering Action Date and Due Date is Not the Signature Date of the Fourth Five-Year Review</u></p> <p>EPA's long-standing position is that the statutory due date for the Sixth Five-Year Review Report is November 8, 2028, which is not reflected in this Five-Year Review Report. If the Navy does not agree with EPA, we suggest our respective attorneys need to resolve this issue. In the interim, EPA's comment of 4/30/2024 and 6/4/2024 stand (attached).</p>	The Navy's signature date is in accordance with DoD policy. However, this does not preclude completing a five-year review sooner than five years. The Navy is open to continuing this discussion between our respective attorneys to come to a resolution.

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
4		<p><u>Parcel B-2 Draft Final Protectiveness Determination for Groundwater; Actions and Associated Schedules Remain Protracted</u></p> <p>In summary:</p> <p>a. EPA remains concerned that the Navy's efforts remain protracted, notwithstanding that the FFA regulatory parties raised the concern about mercury discharges to the Bay and the apparent failure of treatment several years ago. The tri-agency letter of November 23, 2021 (attached), stated "an indefinite period with no corrective action is unacceptable to the FFA regulatory parties." EPA continues to expect a final primary document, as initially committed to by the Navy, by July 31, 2025. EPA expects that in order to meet the deadline for the final, the Navy will appropriately plan for submission of a draft and a draft final, and appropriately plan for the minimum FFA review time frames for such draft (45 days + 30 day extension with notice) and draft final (30 days), in addition to the time frame the Navy will need to respond to comments and revise the document.</p>	<p>a. The Navy understands the agencies' concern that the RAOs have not been met in all the groundwater monitoring wells at IR-26. The Navy is also concerned about the elevated mercury concentrations in monitoring wells IR26MW49A and IR26MW71A.</p>
		<p>b. EPA does not oppose any Navy attempt to optimize delivery of the ISS (e.g., use of a larger rig in areas of prior injection refusal) "as long as such action is timely and completed prior to July 31, 2025" (emphasis added), not October 31, 2025, the latter which the Navy incorrectly attributes to EPA.</p>	<p>b. To clarify, the Navy does not attribute the date change to October 31, 2025 to the EPA. The Navy has since resolved the issue by preparing a primary document that evaluates mercury remediation technologies in groundwater. See response to comment c.</p>
		<p>c. The final primary document due on July 31, 2025, must include additional treatment options that have been initially screened for further evaluation. In addition, the final primary document should evaluate all existing data to determine a path forward. Any attempt to optimize delivery of the ISS should be completed prior to delivery of the final primary document, as the Navy already indicated it would do the former (i.e., via bigger rig) several years ago. EPA rejects a final primary document whose sole goal is to propose methods to enhance ISS delivery. See d., below.</p>	<p>c. The Navy is preparing a primary document to evaluate remediation technologies to address mercury in groundwater. The document will be delivered to the agencies by October 31, 2024, as discussed in the July 2024 BCT Meeting.</p>
		<p>d. EPA does not agree with the Navy's "Path Forward – Parcel B-2, Installation Restoration (IR) Site 26," dated June 2024 and presented at the June 13 Partnering Meeting (attached). This approach and</p>	<p>d. The Protectiveness Statement and Issues and Recommendations for Parcel B-2 has been updated as follows to reflect the Navy's path forward:</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
		<p>schedule, which EPA rejects, does not appear to be reflected in the Draft Final Fifth Five-Year Review Report, but the Navy needs to confirm the latter in writing. EPA rejects a final primary document whose sole goal is to propose methods to enhance ISS delivery.</p>	<p>Protectiveness Statement (Five-Year Review Summary Page and Section 3.7.3 of the Five-Year Review): <i>A protectiveness determination cannot be made because there is uncertainty related to concentrations of mercury potentially discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions need to be made: (1) evaluate technologies for treating mercury in groundwater (2) apply the selected method that is within compliance of the selected remedy in the record of decision. A draft primary document presenting the evaluation of the technologies and the proposed treatment method will be provided to the FFA regulatory agencies for review by October 31, 2024. The Navy anticipates initiating field application of the selected treatment method by mid-July 2025. Contingencies will be discussed during development of the work plan and exercised as the need arises. The protectiveness determination will be re-evaluated in the Five-Year Review addendum based on information that becomes available after the completion of this FYR.</i></p> <p>Issues and Recommendations (Five-Year Review Summary Page and Table 3-9 of the Five-Year Review): <u>Issue:</u> <i>The in-situ stabilization remedy for mercury in Parcel B-2, IR-26 groundwater did not reduce concentrations to below the 0.6 µg/L trigger level across the entire site and there is uncertainty related to the concentrations of mercury potentially discharging to the Bay from Parcel B-2, IR-26 groundwater.</i> <u>Recommendation 1:</u> <i>Prepare a primary document evaluating technologies for treating mercury in groundwater and presenting a proposed treatment method for FFA regulatory agency review.</i> <u>Milestone:</u> <i>10/31/2024</i> <u>Recommendation 2:</u> <i>Apply the selected treatment method in the field and initiate performance monitoring.</i> <u>Milestone:</u> <i>7/15/2025</i></p>
		<p>e. As the FFA regulatory parties stated in the tri-agency letter of November 23, 2021, “the continued discharge of mercury without additional remediation prevents FFA regulatory party acceptance of a future IR 26 Remedial Action Completion Report (RACR) and timely</p>	<p>e. Comment acknowledged</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
		transfer of the property, and poses an ongoing threat to human health and the environment and compliance concern for the regulators.”	
		f. EPA notes that mercury concentrations do not appear to be on any clear downward trend (see EPA’s updated table, attached). The most recent concentration available to EPA for IR26MW49A is 5.55 ug/L and for IR26MW71A is 1.75 ug/L (PAL is 0.6 ug/L).	f. Comment acknowledged, future evaluation of the data, to be conducted as part of the protectiveness determination/FYR Addendum, will include statistical evaluation of the dataset to determine the trends.
		g. The Navy’s proposed new Table 3-4 (comparison of groundwater quality parameters to Bay water quality parameters) appears very limited. A more appropriate place for the proposed table is the prospective primary document, not this Five-Year Review Report. This table is premature, warrants discussion with the FFA regulatory parties, and should be removed from this Five-Year Review Report.	g. This table was presented to the Agencies during the April 25, 2024 meeting and was requested for inclusion in this FYR by DTSC.
		h. The Navy does not provide a reference, rationale, or relevance for the comparison to “10 times the 0.6 <u>ug/L</u> TL.” The Navy seems to be assuming, arbitrarily, a “dilution factor of 0.1.” This topic is more appropriately included in the prospective primary document, warrants discussion with the FFA regulatory parties, and should be removed from this Five-Year Review Report.	h. The rationale for using a 0.1 dilution factor is presented in Section 3.5.1.3 in the fourth bullet citing a study by “State of Washington, Department of Ecology (2009) which found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1).”
		i. EPA comments of 4/30/2024 and 6/4/2024 stand.	i. Comment acknowledged.
		j. The Navy needs to perform more robust quality assurance and quality control of its Five- Year Review Report before release to the FFA regulatory parties and the public.	j. Comment acknowledged. Reference: State of Washington, Department of Ecology. 2009. <i>High-resolution porewater sampling near the groundwater/surface water interface</i> . Publication No. 09-03-017. April.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
4		<p>Parcel C Draft Final Protectiveness Determination for Groundwater</p> <p>a. EPA appreciates the Navy's efforts via the Parcel C Phase III RAWP, the Navy's investigation of the deep F-WBZ, the latter in response to FFA regulatory party informal dispute, and the Navy's previous agreement, as documented in the Phase III RAWP, to fully characterize the B-aquifer and the underlying upper F-WBZ. To the extent there is inadvertent discrepancy between this document and the Phase III RAWP and/or the deep F-WBZ RAWP, EPA expects the RAWPs and our associated comments to prevail.</p> <p>EPA continues to expect that performance monitoring associated with the Parcel C RAWP, including the agreed to additional B-aquifer monitoring, can commence within approximately two years.</p>	<p>a. Comment acknowledged.</p>
		<p>b. As stated previously, EPA will not review or comment on the Navy's "Water Board specific concerns" that the Navy inserted into its response to EPA's comments. This should not be construed as EPA agreement or consensus.</p>	<p>b. There are no Water Board specific concerns in the Parcel C Protectiveness Determination comment (<i>EPA Comment 3 on Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2</i>). Water Board concerns, as well as EPA and DTSC-specific responses that resulted in changes to the Five-Year Review text were incorporated into the responses to all Agency responses to provide the full extent of the changes to the Five-Year Review text.</p>
		<p>c. To help facilitate consistency, EPA's comments of 4/30/2024 and 6/4/2024 stand.</p>	<p>c. Comment acknowledged.</p> <p>Note that the protectiveness determination and milestone dates for the issues and recommendations for Parcel C have been updated as follows:</p> <p>Protectiveness Statement (Five-Year Review Summary Page and Section 4.7.1 of the Five-Year Review):</p> <p><i>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B-aquifer present potential unacceptable risks to Bay receptors. In order to make a protectiveness determination, the following action, at a minimum, needs to be made: (1) complete investigations of the (a) Bay Mud/Sandy Lean Clay aquitard, (b) extent of chemicals in the deep F-WBZ in RU-C4, and (c) extent of chemicals in the B-aquifer and F-WBZ in RU-C2 and (2) use current ecological risk assessment methods and criteria, as appropriate, to assess potential impacts to Bay receptors.</i></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
			<p><i>The estimated timeframe for each action is as follows:</i></p> <ul style="list-style-type: none"> • <u>Complete investigations of the Bay Mud/Sandy Lean Clay aquitard, expected to occur by Fall 2026</u> • <u>Complete investigation of the extent of chemicals in the deep F-WBZ in RU-C4 expected to occur by Fall 2026</u> • <u>Complete investigation of the extent of chemicals in the B-aquifer and F-WBZ in RU-C2 expected to occur by Spring 2027</u> • <u>Assess potential impacts to Bay receptors, expected to occur by Fall 2026</u> <p><i>The FFA parties will have discussions, as appropriate, prior to scoping and developing primary documents, such as workplans, expected to occur in Fall 2025. The protectiveness determination will be re-evaluated in the addendum based on information that becomes available after the completion of this FYR.</i></p> <p><i>The RAOs for soil are met through hotspot excavation and disposal, durable covers, and ICs. Groundwater remediation is ongoing, and, once active treatment is complete, MNA will continue until COCs reach remediation goals (RGs). Until that time, ICs control exposure to groundwater. Radiological retesting is ongoing to confirm that levels in soil and structures are protective of human health.</i></p> <p>Issues and Recommendations Milestone update (Five-Year Review Summary Page and Table 4-8 of the Five-Year Review):</p> <p><u>Milestone: 5/31/2027</u></p> <p><i>Interim Milestones:</i></p> <p><u>Five-Year Review Addendum 7/31/2025</u></p> <p><i>F-WBZ investigation fieldwork 11/30/2025</i></p> <p><i>F-WBZ investigation report 11/30/2026</i></p>

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
5		<p>Parcel E-2 Draft Final Protectiveness Determination; EPA Changing Its Position to Protectiveness Deferred</p> <p>a. As stated in our comments, and at the April 25, 2024, meeting, “it is EPA’s position that if the Navy is unable to agree to the timely analysis of existing Parcel E-2 groundwater data, EPA may need to consider the effect this may have on potential performance issues at Parcel E-2 and our current protectiveness determination” (emphasis added). After review of the <i>Draft Final Fifth Five-Year Review Report</i> (i.e., this document), EPA has concluded that the Navy has not agreed to timely analysis of existing Parcel E-2 groundwater data. Accordingly, EPA is changing its position to “Protectiveness Deferred.”</p>	<p>a. There have been no changes in the Navy’s commitments that have been made to the regulatory agencies since the April 25, 2024 meeting. The work plan for evaluating the upland slurry wall was submitted on July 11, 2024, which addresses one of the four primary issues discussed during the April 25 meeting. The Navy stated in the work plan transmittal letter that to the remaining three issues will be included in a forthcoming task order. As discussed during the July 23, 2024, meeting with FFA Regulatory Agencies, contract scope for the new task order will be discussed during a meeting scheduled for August 29, 2024, and the task order is anticipated to be awarded in January 2025.</p> <p>The Navy has revised the Parcel E-2 Other Findings (Five-Year Review Summary Form and Section 6.6.1.5 of the Five-Year Review) as follows:</p> <ul style="list-style-type: none"> • <u>Evaluate the effect of landfill cap and slurry walls on groundwater including flow, leachate attenuation, and potential impact to the San Francisco Bay, anticipated after the approval of the Parcel E-2 Phase IV work plan by the FFA regulatory agencies, anticipated by Spring 2027.</u> • <u>Collect confirmation soil samples for lead in the wetland areas following the excavation, anticipated by Summer 2027.</u> • <u>Collect confirmation soil samples for PCBs, PAHs, pesticides and metals for the soil stockpile area, anticipated by Summer 2026.</u> • Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018): <ul style="list-style-type: none"> – Landfill Gas System (Phase IVa) anticipated in 11/30/2025 <u>11/30/2026</u> – Wetlands (Phase IVb) anticipated in 11/30/2027 • Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly <u>recently expanded</u> installed landfill cover as a new compliance point by revising the appropriate

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
		<p>b. EPA has stated that “it is imperative that the Navy immediately begin to evaluate the effect the landfill cap and slurry walls have on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay.” The collection and analysis of data should not be deferred pending the completion of the remaining facilities, which do not appear to be particularly integral to landfill closure as it pertains to groundwater (e.g., wetlands, and landfill gas conveyance). As EPA stated, as part of the evaluation, the Navy must produce, at a minimum, plume maps of contaminant concentrations, and groundwater contour maps showing flow direction in the A- and B-aquifers. EPA informally provided the Navy with a copy of “FFA Regulatory Party GWM Information and Analysis Minimum Needs From Navy, Parcel E-2” that will be attached to the forthcoming tri-agency letter referenced in EPA’s earlier comments and in discussions.</p>	<p><i>primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024.</i></p> <ul style="list-style-type: none"> <i>Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated by 11/30/2024.</i> <i>Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 8/31/2024 Fieldwork is anticipated to be completed in 2024 and the Final Post-Construction Remedial Action Performance Report is anticipated by 12/31/2024. Approval of the Final Workplan is anticipated by 11/15/2024, Fieldwork is anticipated to be completed in April 2025, Draft Report to Navy in October 2025 and the Final Post-Construction Remedial Action Performance Report is anticipated by March 2026.</i> <p>b. Comment acknowledged. Navy has committed in the Five-Year Review to evaluating the effect of the landfill cap and slurry walls on groundwater by March 2026 (see a.). As discussed during the July 23, 2024 meeting with FFA regulatory agencies, Navy committed to providing the information that was in the spreadsheet and will respond to the tri-agency formal request when received.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX I

No.	Location	EPA Region 9 Comments Dated July 19, 2024	Navy Response
		c. EPA also stated that the FFA parties need a clear and common understanding of the status of Parcel E-2 groundwater and leachate monitoring and extraction wells, French Drain sampling port, FW piezometers, and FW outfalls. EPA informally provided the Navy with a copy of an Excel worksheet with the list of known (to the FFA regulatory parties) wells and the associated information needs that will be attached to the forthcoming tri-agency letter referenced in EPA's earlier comments and in discussions. Directing the FFA regulatory parties to the BGMP (typically over 20,000 pages) is neither helpful nor responsive.	c. Comment acknowledged, Navy reiterates the response to (b)
		d. The lack of appropriate data collection and analysis to evaluate the effect the landfill cap and slurry walls has on groundwater flow and contaminant concentration within the landfill, and potential impact on the San Francisco Bay will delay FFA regulatory party acceptance of a future Remedial Action Completion Report (RACR) and the timely transfer of the property, poses an ongoing threat to human health and the environment, and raises compliance concerns for the regulators.	d. Comment acknowledged.
		e. Regarding methane exceedances, as the FFA regulatory parties have stated on numerous occasions, GMP-07A remains a compliance point until such time that the Navy amends, for FFA regulatory party review and comment, the appropriate primary document(s).	e. Comment acknowledged, as discussed in the response to <i>EPA Comment 3, Navy's Draft Protectiveness Determinations for Parcels B-2, C, and E-2</i> the Other Findings section for Parcel E-2 (Five-Year Review Summary Form and Section 6.6.1.5) has already been updated in the FYR as follows: <i>"Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the recently expanded landfill cover as a new compliance point by revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024."</i>
		f. On page xx, EPA does not agree that a memo to the file is an appropriate post-ROD documentation of the change. This topic warrants discussion with the FFA regulatory parties, and its inclusion in this Five-Year Review Report should not be construed as agreement or consensus.	f. This text was updated to the following in the Five-Year Review Summary Form and Section 6.6.1.4: <i>The Navy intends to prepare post-ROD change documentation in the form of a memo to file to reflect this change.</i>
		g. EPA comments of 4/30/2024 and 6/4/2024 stand.	g. Comment acknowledged.

This page intentionally left blank.

Appendix J

Comments and Responses to City of San Francisco Department of Health Comments on Draft Five-Year Review Report and Climate Resilience Assessment

This page intentionally left blank.



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH

London N. Breed, Mayor
 Grant Colfax, MD, Director of Health

Patrick Fosdahl, MS, REHS
 Director, Environmental Health

April 12, 2024

Michael Pound
 BRAC Environmental Coordinator, Hunters Point Shipyard
 Base Realignment and Closure
 Program Management Office West
 33000 Nixie Way, Bldg 50, Suite 207
 San Diego, CA 92147

Subject: SFDPH Preliminary Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

Dear Michael Pound:

This letter is intended to provide San Francisco Department of Public Health's (SFDPH) preliminary comments on the Draft Climate Resilience Assessment (CRA), included as an appendix to the Draft Fifth Five Year Review (FYR) Report. We intend to submit additional comments on the entire FYR Report by the regulatory review period deadline. The inclusion of the CRA in the FYR Report provides an important "first step" evaluation of the potential impacts of sea level rise (SLR) and groundwater rise (GWR) on the Shipyard and, by extension, the health of Bayview-Hunters Point residents.

We recognize the immediate need and right for the public to be informed through transparent and inclusive communications from the Navy. The potential health impacts of contamination should be explained in plain language that is clear and concise. Accessibility to a more readable document will help community stakeholders better understand each step of the process and allow them to actively participate.

This letter also underscores the critical need for the Navy to begin further site-specific studies of all affected parcels as soon as possible with the goal of developing adequate responses to the threat of climate change. It is extremely important that the long-term protectiveness of all remedies at the Shipyard is maintained by the Navy, to ensure the highest possible standard of health and wellbeing for the Bayview-Hunters Point community.

General Comments:

1. **Parcel D-1 Vulnerability:** The findings of the CRA indicate that Parcel D-1 will be the first area in the Shipyard impacted by groundwater emergence in 2035, if not earlier. The impacts of SLR/GWR on Parcel D-1 have the potential to affect the long-term effectiveness of the selected remedy. Given the potential presence of radiological objects (ROs) within portions of the parcel, it is imperative that the Navy and regulatory agencies select Remedial Alternative R-2A (Excavation, Disposal, Survey, and ICs) as detailed in the February 2023 Focused Feasibility Study.

Selecting the "full excavation" remedial alternative for Parcel D-1 would serve two primary purposes. Firstly, it aligns with the City's 2001 Proposition P Resolution, which calls on the Navy

HUNTERS POINT SHIPYARD PROGRAM
 49 South Van Ness Avenue, Suite 600, San Francisco, CA 94103
 Phone 415-252-3967

Michael Pound

SFDPH Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

to clean up the Shipyard to the highest technically feasible and practical standards to protect future occupants and the public. Secondly, it provides additional confidence to the City and the public in response to the CRA's finding in Section 6.1 that the current asphalt cover may no longer offer sufficient protection due to permanent groundwater emergence at Parcel D-1, resulting in potential vulnerabilities to human and San Francisco Bay receptors from ROs.

Given the concerns noted above, the Navy should begin a site-specific study of Parcel D-1 as recommended in the CRA as soon as possible.

2. **Public Concerns Regarding Contaminant Mobilization:** Revise the CRA to address scientific and public concerns that soil and groundwater contaminants might migrate under different SLR/GWR scenarios. Section 5.0 (Vulnerability Assessment) partially addresses this issue, but additional clarity and detail are necessary. Specific recommendations are provided below:
 - a. Develop new figures in the CRA that show the locations of known contaminants as they relate to SLR/GWR concerns. For example, figures could show the extent of volatile organic compound (VOC) plumes and Areas Requiring Institutional Controls (ARICs). Additional figures could show the extents of parcel-specific remedy components (e.g., durable covers and demarcation layers) as they relate to ubiquitous metals and other residual chemicals of concern (COCs), including petroleum hydrocarbons and potential ROs, that may remain in place in 2035 and 2065. Creating a layered figure showing these elements together would help support community understanding and education.
 - b. Include tables for each parcel detailing the residual COCs, radionuclides of concern (ROCs), and ROs that may be present in soil and groundwater and discuss how these contaminants are being assessed as part of the CRA.
 - c. Include supporting documentation as an exhibit to the CRA detailing the Navy's process for determining which COCs, ROCs, and ROs may become mobile under each SLR/GWR scenario – specify which contaminants are mobile and which are not. Additionally, identify any residual vadose zone contaminants that could potentially become mobile due to GWR.
 - d. Provide the approach (using both monitoring and predictive methods) that the Navy will use to track SLR/GWR and contaminant mobility at the Shipyard. Include the triggers that will prompt action and remedy reassessment, if needed.
3. **Community Understanding:** The technical terms and figures used within the CRA can be difficult for members of the public to understand. Revising the text to remove these unnecessary terms will enhance comprehension and by extension confidence in the public that the Navy is taking the potential effects of SLR/GWR seriously. Inclusion of standalone figures that align with the style of the rest of the FYR will assist with better visualizing the potential impacts and vulnerabilities identified within the CRA. Specific recommendations are provided below:
 - a. The existing figures are too technical and would be better served as an exhibit to the CRA. The titles of new figures should be simple and understandable (e.g., "Permanent Flooding Risk due to 1-foot of Sea Level Rise"). The Port of San Francisco has developed figures that depict vulnerability zones and areas of combined SLR/GWR risk as part of their Waterfront

Michael Pound

SFDPH Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

Flood Study in collaboration with the U.S. Army Corps of Engineers (see [here](#)). The Port's figures are formatted and presented in such a way that enables better community understanding.

- b. Provide a new figure showing the extent of the Installation Restoration (IR) sites within the Shipyard. The CRA refers to the IR sites within each parcel when discussing potential vulnerabilities and future site-specific studies; however, they are not depicted in any figure for context.
 - c. Provide new figures showing geologic cross-sections of the different SLR/GWR scenarios discussed within the CRA (e.g., groundwater emergence, groundwater within 3 feet of ground surface, etc.) to assist in conceptually visualizing potential concerns. Similar examples are provided in the Port's Flood Study.
 - d. Revise Figure 3-3 to show monitoring wells that were included in the analysis but did not show groundwater level rise to within 3 feet of the ground surface. This will assist with understanding that all areas of the Shipyard were reviewed for GWR. In future site-specific studies, models should be generated to show the anticipated extent of near surface GWR.
 - e. Provide new figures illustrating the combined risk for shoreline inundation and groundwater emergence for both 2035 and 2065. These risk areas are already shown in the existing figures; combining this information will assist members of the public in visualizing the overall risk to the Shipyard from SLR/GWR. Similar examples are provided in the Port's Flood Study.
4. **Transferred Parcels:** The CRA does not include Parcels D-2, UC-1, and UC-2 in its evaluation of the potential impacts and vulnerabilities associated with SLR/GWR. Revise the CRA to include these parcels and provide relevant discussion of the effectiveness of the existing remedies at these parcels.
 5. **Improving Analysis Transparency:** Revise the CRA to incorporate additional supporting information related to the analyses conducted, including the following items (at a minimum):
 - a. Identification and qualifications of all involved organizations, academics, and consultants.
 - b. All groundwater elevation data and base topographic files/maps.
 - c. The current statistical trend graph depicting groundwater levels used to assess SLR/GWR at the Shipyard. Is there evidence indicating that GWR is presently occurring?

Specific Comments:

1. **Section 2.0, Impacts of Seawater Inundation:** Develop a new sub-section that identifies which parcels include existing remedy components that consider SLR (such as those associated with shoreline protection). Discuss the protectiveness of the remedy components considering the CRA findings and any additional site-specific studies needed to assess protectiveness.

Michael Pound

SFDPH Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

2. **Section 2.1, SLR Projections:** The CRA assumes 1.0 feet and 3.2 feet of SLR by 2035 and 2065, respectively, based projections provided by the Department of Defense's (DoD's) Regional Sea Level (DRSL) database.¹ The CRA does not include projected SLR for 2100, even though that assessment is included in both DTSC's Draft SLR Guidance document and the Port's Flood Study. We strongly urge the Navy to consider including the 2100 SLR projection, given that the project's useful life will be greater than 80 years. Additionally, the text of this sub-section should be revised to describe how the DRSL database uses regional data to inform on SLR projections.
3. **Section 2.1, SLR Projections:** Revise this sub-section to state that SLR projections used in future site-specific studies will be in agreement with FFA regulatory parties. The Navy's SLR projections should be consistent with those estimates being used along adjacent areas of the San Francisco Bay shoreline (e.g., the Port's Flood Study) to ensure consistency in vulnerability assessments and proposed protections.
4. **Section 3.0, SLR Impacts on Shallow Groundwater:** Develop a new sub-section to identify parcels with remedy components that already consider GWR, such as those associated with shoreline protection. Discuss the Navy's considerations regarding potential GWR-related vulnerabilities, including (1) geotechnical stability of the shoreline and shoreline structures and (2) hydrostatic uplift for buildings not slated for demolition. Indicate whether previous geotechnical assessments for these elements remain protective.
5. **Section 5.0, Vulnerability Assessment:** Develop new sub-sections that address ROC and RO vulnerabilities. The FYR's Conclusion section states (in part) that the CRA identified vulnerabilities to human receptors and San Francisco Bay receptors from low-level radiological objects, but the basis for that conclusion is not adequately described within the CRA.
6. **Section 5.0, Vulnerability Assessment:** Develop a new sub-section to identify existing groundwater plumes and discuss whether migration is anticipated to be a concern under different SLR/GWR scenarios. If some plume movement is anticipated, how much movement is acceptable before additional remedial actions are necessary? Are the anticipated movements limited to within the present-day boundaries of the Shipyard? Discuss how this relates to remediation timelines and residual COC concentrations anticipated to remain in place following remedy completion. Can these concerns be monitored by the existing Basewide Groundwater Monitoring Program (BGMP)? Include that these concerns will be assessed within the site-specific studies.
7. **Section 5.3.1, Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs:** The CRA indicates that chlorinated volatile organic compounds (CVOCs) in groundwater are projected to attenuate below remedial goals (RGs) by 2035; however, neither the CRA nor the FYR Report include timelines to support this assumption. Revise this sub-section to address this uncertainty and describe how this assumption will be tracked in future FYR Reports and site-specific studies recommended in the CRA.
8. **Section 5.3.1, Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs:** Revise this sub-section to include that future site-specific studies will discuss whether GWR within 3 feet of ground surface is anticipated to impact Areas Requiring

¹ <https://drsl.serdp-estcp.org/sealevelrise/1440/feet>

Michael Pound

SFDPH Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

Institutional Controls (ARICs) for vapor intrusion or preferential pathways post-transfer within each parcel, based on assumed remedial completion timelines.

9. **Section 5.3.5, Potential New Exposure of Bay Ecological Receptors to Heavy Metals, PCBs and PAHs from Erosion due to Storm Surges:** Revise this sub-section to discuss how the Navy will assess the condition of the durable covers following the occurrence of storm surges and waves. How will the Navy ensure that erosion is not occurring and that it is not impacting the San Francisco Bay or adjoining properties?
10. **Section 5.3.6, Parcel E-2 Remedy Resiliency:** Revise this section to discuss the potential influence of the Upland Slurry Wall on GWR in Parcel E-2. Community concerns have been expressed that conventional defensive structures, such as sea walls, may exacerbate flooding risks by creating a physical barrier that prevents risen groundwater from flowing out. If a potential vulnerability is identified, Section 6.0 should be updated to include a site-specific study of Parcel E-2. This study should assess potential impacts to off-site adjoining properties.
11. **Section 6.0, Conclusions and Recommendations:** The CRA should include specific, actionable, and measurable recommendations for the site-specific studies at the Shipyard. Detailed suggestions for these recommendations are provided below:
 - a. Include a timeline for completing site-specific studies for each parcel. These studies must be prioritized as soon as possible, and, at minimum, the studies of each Parcel should be completed prior to the next FYR (anticipated in 2028). Parcel D-1 is anticipated to be vulnerable by 2035, if not earlier, which makes this study particularly pressing (refer to General Comment 1).
 - b. Studies should be completed, at minimum, on a parcel-by-parcel basis if not a site-wide basis to accommodate for groundwater/contaminant interactions across parcels. The currently proposed IR approach neglects the presence of ubiquitous metals across the Shipyard and the possibility that VOC-impacts in soil vapor may not be confined to a specific IR site.
 - c. Specify the minimum scope of the site-specific studies. Each study must include modeling of SLR/GWR; groundwater flow and emergence; overland flow and storm surge (i.e., flooding); and contaminant impacts/mobilization. The modeling must consider site-specific hydrogeology and geology at partially in-filled shoreline and upland areas, and specific remedy components (i.e., at slurry walls). Each study should include an assessment of contamination remaining in-place under durable covers and the impacts such climate vulnerabilities may have on the mobilization of contaminants. Site-specific study results should include an updated conceptual site model for each parcel.
 - d. Include an assessment of contaminants that are not under CERCLA, including petroleum hydrocarbons and PFAS.
 - e. Adequately address the question of long-term protectiveness of each parcel's current remedy and propose additional actions if the study's conclusion finds that long-term protectiveness may be lessened by SLR/GWR. Include an assessment of long-term

Michael Pound

SFDPH Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

protectiveness of ARICs for vapor intrusion concerns. Address how on-going monitoring at the Shipyard will complement the proposed actions.

- f. Include a discussion of the CERCLA process and how much time will be needed to adjust a parcel's remedy if the site-specific study finds that the given remedy is no longer protective.

12. **Section 6.0, Conclusions and Recommendations:** The CRA states that changes in the five tidal gauge measurements nearest to the Shipyard (Alameda, Richmond, Redwood, Port Chicago, and San Francisco) and groundwater elevations at the Shipyard will be tracked to assess the impact of the projected vulnerabilities over time. At what gauge measurement or groundwater elevation measurement will the monitoring trigger action at the Shipyard parcels? Which criteria will be used to determine when a change in remedial implementation or action is needed?

Minor Comments:

1. **Consistency/Typos:** Please correct the following consistency and/or typos:
 - a. Section 2.3, Storm Surges, Bullet 1: Remove the reference to Parcel F.
 - b. Table 5-2: Please revise Table 5-2 to state that Parcel E-2 will be impacted by a 100-year storm to match the text and Table 2-3.
2. Figure 1-1: Define what "Adaptive Capacity" means.

Sincerely,

DocuSigned by:

 38D28D0C0E36462

Ryan Casey, P.E.
Engineer

Cc: Danielle Janda, Navy
 Erica Schmandt, Navy
 Jamie Egan, Jacobs
 Andrew Bain, USEPA
 Michael Howley, DTSC
 Mary Snow, RWQCB
 Susan Philip, DPH
 Thor Kaslofsky, OCII
 Lila Hussain, OCII
 Christina Rain, Langan
 Randy Brandt, Geosyntec Consultants

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930	Responses By Navy
Comment By Ryan Casey, P.E. Engineer	Code/Organization San Francisco Department of Public Health (SFPDH) Environmental Health		Date April 2024
Project Title and Location Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023			Type of Review
			X Draft
			Final
			Other

No.	Location	SFPDH Preliminary Comments dated April 12, 2024	Navy Response
General Comments			
1	General	<p>Parcel D-1 Vulnerability: The findings of the CRA indicate that Parcel D-1 will be the first area in the Shipyard impacted by groundwater emergence in 2035, if not earlier. The impacts of SLR/GWR on Parcel D-1 have the potential to affect the long-term effectiveness of the selected remedy. Given the potential presence of radiological objects (ROs) within portions of the parcel, it is imperative that the Navy and regulatory agencies select Remedial Alternative R-2A (Excavation, Disposal, Survey, and ICs) as detailed in the February 2023 Focused Feasibility Study.</p> <p>Selecting the “full excavation” remedial alternative for Parcel D-1 would serve two primary purposes. Firstly, it aligns with the City’s 2001 Proposition P Resolution, which calls on the Navy to clean up the Shipyard to the highest technically feasible and practical standards to protect future occupants and the public. Secondly, it provides additional confidence to the City and the public in response to the CRA’s finding in Section 6.1 that the current asphalt cover may no longer offer sufficient protection due to permanent groundwater emergence at Parcel D-1, resulting in potential vulnerabilities to human and San Francisco Bay receptors from ROs.</p> <p>Given the concerns noted above, the Navy should begin a site-specific study of Parcel D-1 as recommended in the CRA as soon as possible.</p>	<p>The groundwater emergence maps in the CRA use a conservative rule of thumb (1:1) to identify potential areas of emergence. These maps provide an initial foundation for further research and modeling efforts to validate and refine the projections, and are being further validated through visits to areas of projected impact, observation of the ground topography, consolidation of monitoring well construction details, etc. Following this validation of projections, site-specific studies at Parcel D-1 and/or other parcels will be considered and discussed with the agencies. The recommendation in the CRA is to follow the identification of vulnerabilities in the CRA with site-specific studies to further validate them, conduct human-health and ecological risk assessments to determine whether the protectiveness statements in the five-year review will be impacted, and then assess remedial measures to address any human health or ecological risk.</p>

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
General Comments			
2	General	<p>Public Concerns Regarding Contaminant Mobilization: Revise the CRA to address scientific and public concerns that soil and groundwater contaminants might migrate under different SLR/GWR scenarios. Section 5.0 (Vulnerability Assessment) partially addresses this issue, but additional clarity and detail are necessary. Specific recommendations are provided below:</p> <p>a. Develop new figures in the CRA that show the locations of known contaminants as they relate to SLR/GWR concerns. For example, figures could show the extent of volatile organic compound (VOC) plumes and Areas Requiring Institutional Controls (ARICs). Additional figures could show the extents of parcel-specific remedy components (e.g., durable covers and demarcation layers) as they relate to ubiquitous metals and other residual chemicals of concern (COCs), including petroleum hydrocarbons and potential ROs, that may remain in place in 2035 and 2065. Creating a layered figure showing these elements together would help support community understanding and education.</p> <p>b. Include tables for each parcel detailing the residual COCs, radionuclides of concern (ROCs), and ROs that may be present in soil and groundwater and discuss how these contaminants are being assessed as part of the CRA.</p> <p>c. Include supporting documentation as an exhibit to the CRA detailing the Navy's process for determining which COCs, ROCs, and ROs may become mobile under each SLR/GWR scenario – specify which contaminants are mobile and which are not. Additionally, identify any residual vadose zone contaminants that could potentially become mobile due to GWR.</p> <p>d. Provide the approach (using both monitoring and predictive methods) that the Navy will use to track SLR/GWR and contaminant mobility at the Shipyard. Include the triggers that will prompt action and remedy reassessment, if needed.</p>	<p>The CRA is a screening level assessment. Items (a) through (d) will be considered during site-specific studies to further assess the vulnerabilities identified in the CRA and plans for these studies will be discussed with the agencies. The CRA already provides the basis for focusing on heavy metals in 2035 and 2065. Heavy metals are likely to persist at current (or post-remedy) levels in 2035 and 2065 and are potentially soluble in seawater and groundwater. Therefore, their potential to be mobilized through dissolution is identified as a vulnerability. Residual CVOCs (after ongoing or planned source treatment and removal) are not expected to persist through 2065 and their attenuation will be monitored through the ongoing monitoring program. PAHs and PCBs are relatively insoluble and their mobilization potential is only through erosion of soil. As HPNS has ubiquitous land covers (asphalt or vegetated soil), erosion of soil containing residual PAHs and PCBs is not identified as a vulnerability.</p>
3	General	<p>Community Understanding: The technical terms and figures used within the CRA can be difficult for members of the public to understand. Revising</p>	<p>For the benefit of the community, the Navy has tried to keep technical terms to a minimum in the CRA, especially in introductory and</p>

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
General Comments			
		<p>the text to remove these unnecessary terms will enhance comprehension and by extension confidence in the public that the Navy is taking the potential effects of SLR/GWR seriously. Inclusion of standalone figures that align with the style of the rest of the FYR will assist with better visualizing the potential impacts and vulnerabilities identified within the CRA. Specific recommendations are provided below:</p> <p>a. The existing figures are too technical and would be better served as an exhibit to the CRA. The titles of new figures should be simple and understandable (e.g., “Permanent Flooding Risk due to 1-foot of Sea Level Rise”). The Port of San Francisco has developed figures that depict vulnerability zones and areas of combined SLR/GWR risk as part of their Waterfront Flood Study in collaboration with the U.S. Army Corps of Engineers (see here). The Port’s figures are formatted and presented in such a way that enables better community understanding.</p> <p>b. Provide a new figure showing the extent of the Installation Restoration (IR) sites within the Shipyard. The CRA refers to the IR sites within each parcel when discussing potential vulnerabilities and future site-specific studies; however, they are not depicted in any figure for context.</p> <p>c. Provide new figures showing geologic cross-sections of the different SLR/GWR scenarios discussed within the CRA (e.g., groundwater emergence, groundwater within 3 feet of ground surface, etc.) to assist in conceptually visualizing potential concerns. Similar examples are provided in the Port’s Flood Study.</p> <p>d. Revise Figure 3-3 to show monitoring wells that were included in the analysis but did not show groundwater level rise to within 3 feet of the ground surface. This will assist with understanding that all areas of the Shipyard were reviewed for GWR. In future site-specific studies, models should be generated to show the anticipated extent of near surface GWR.</p> <p>e. Provide new figures illustrating the combined risk for shoreline inundation and groundwater emergence for both 2035 and 2065. These risk areas are already shown in the existing figures; combining this information will assist members of the public in visualizing the overall risk</p>	<p>concluding paragraphs in each section, while still providing enough technical detail to scientists among the stakeholders who are likely to read the CRA and evaluate its methodology. As the Navy progresses to site-specific studies, consideration will be given to Items (a) through (e), as the Navy continues to look for ways to make the CRA more relatable to the community.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
General Comments			
		to the Shipyard from SLR/GWR. Similar examples are provided in the Port's Flood Study.	
4	General	Transferred Parcels: The CRA does not include Parcels D-2, UC-1, and UC-2 in its evaluation of the potential impacts and vulnerabilities associated with SLR/GWR. Revise the CRA to include these parcels and provide relevant discussion of the effectiveness of the existing remedies at these parcels.	Parcels D-2, UC-1, and UC-2 are parcels that are much further upland and upgradient and maps in the CRA showing permanent seawater inundation and groundwater rise in 2035 and 2065 do not show these parcels as impacted. Parcels UC-1 and UC-2 show some areas of impact due to storm surge and this impact will be noted in the CRA.
5	General	Improving Analysis Transparency: Revise the CRA to incorporate additional supporting information related to the analyses conducted, including the following items (at a minimum): a. Identification and qualifications of all involved organizations, academics, and consultants. b. All groundwater elevation data and base topographic files/maps. c. The current statistical trend graph depicting groundwater levels used to assess SLR/GWR at the Shipyard. Is there evidence indicating that GWR is presently occurring?	a. The CRA was prepared in-house by the Navy's Engineering and Expeditionary Warfare Center (EXWC) Environmental Restoration Division in Port Hueneme, CA. The names and affiliations of all Navy and non-Navy peer reviewers will be provided in the Acknowledgments page. b. Topographic and monitoring well construction data are being validated and this process will continue through 2024. During the planning for site-specific studies, the reporting requirements for groundwater elevation and topographic data will be discussed. c. A preliminary statistical trend analysis did not show any evidence that groundwater rise was currently occurring. After data validation is complete, a more rigorous trend analysis will be presented as part of site-specific studies

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
1	Section 2.0	Impacts of Seawater Inundation: Develop a new sub-section that identifies which parcels include existing remedy components that consider SLR (such as those associated with shoreline protection). Discuss the protectiveness of the remedy components considering the CRA findings and any additional site-specific studies needed to assess protectiveness.	The CRA is a screening level assessment to identify potential vulnerabilities that can be further assessed in site-specific studies at HPNS. These site-specific studies and prioritization of parcels will be discussed with the agencies. Protectiveness statements in a Five-Year Review are only affected when the exposure pathway has the potential to be complete (groundwater is likely to emerge and land use is such that receptors could be exposed) and a future unacceptable health or risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors).
2	Section 2.1	SLR Projections: The CRA assumes 1.0 feet and 3.2 feet of SLR by 2035 and 2065, respectively, based projections provided by the Department of Defense's (DoD's) Regional Sea Level (DRSL) database. ¹ The CRA does not include projected SLR for 2100, even though that assessment is included in both DTSC's Draft SLR Guidance document and the Port's Flood Study. We strongly urge the Navy to consider including the 2100 SLR projection, given that the project's useful life will be greater than 80 years. Additionally, the text of this sub-section should be revised to describe how the DRSL database uses regional data to inform on SLR projections. ¹ https://drsl.serdp-estcp.org/sealevelrise/1440/feet	The Navy will assess Year 2100 projections in conjunction with site-specific studies. More information on how global sea level rise projections were regionalized by DoD is provided in: Sweet, William (William Vanderveer); Obeysekera, Jayantha; Marburger, John H. (John Harmen); Knuuti, Kevin; Gill, Stephen; Hall, John S. Regional Sea Level Scenarios for Coastal Risk Management: Managing the Uncertainty of Future Sea Level Change and Extreme Water Levels for Department of Defense Coastal Sites Worldwide. HSDL - Regional Sea Level Scenarios for Coastal Risk Management: Managing the Uncertainty of Future Sea Level Change and Extreme Water Levels for Department of Defense Coastal Sites Worldwide This study is referenced in the HPNS CRA as the Hall 2016 report.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
3	Section 2.1	SLR Projections: Revise this sub-section to state that SLR projections used in future site-specific studies will be in agreement with FFA regulatory parties. The Navy's SLR projections should be consistent with those estimates being used along adjacent areas of the San Francisco Bay shoreline (e.g., the Port's Flood Study) to ensure consistency in vulnerability assessments and proposed protections.	The Navy uses the best available science and DOD/DON policy when determining SLR projections. The CRA uses SLR projections made in the DoD Regional Sea Level (DRSL) data base (Highest and Lowest greenhouse gas emissions scenarios). The Highest scenario is conservative and consistent with projections made by OPC (2018) for similar time steps, especially when accounting for the slight offset in timesteps (1 ft of SLR in Navy's DRSL for 2035 versus 0.8-1.3 ft in OPC for 2030-2040; 3.2 ft of SLR in Navy's DRSL for 2065 versus 2.6-3.5 ft in OPC 2060-2070). Since then, OPC has lowered its projections for these years, so that makes the DRSL projections even more conservative. OPC (2024) is now projecting 0.4-0.7 ft of SLR in 2030-2040 and 1.4-2.2 ft in 2060-2070, this making the Navy's projections even more conservative. The Navy's highest projection of 3.2 ft SLR by 2035 is also close to DTSC's climate resilience guidance of 3.5 ft SLR by 2050.
4	Section 3.0	SLR Impacts on Shallow Groundwater: Develop a new sub-section to identify parcels with remedy components that already consider GWR, such as those associated with shoreline protection. Discuss the Navy's considerations regarding potential GWR-related vulnerabilities, including (1) geotechnical stability of the shoreline and shoreline structures and (2) hydrostatic uplift for buildings not slated for demolition. Indicate whether previous geotechnical assessments for these elements remain protective.	The CRA provided in the Fifth Five-Year Review (Appendix A) is a first of its kind study in DoD with a screening level assessment of climate change hazards. The focus of this CRA is on assessment of the fate and transport of residual CoCs or protectiveness of remedies and any additional studies related to these issues will be discussed with the agencies as part of the planned site-specific studies.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
5	Section 5.0	Vulnerability Assessment: Develop new sub-sections that address ROC and RO vulnerabilities. The FYR's Conclusion section states (in part) that the CRA identified vulnerabilities to human receptors and San Francisco Bay receptors from low-level radiological objects, but the basis for that conclusion is not adequately described within the CRA.	<p>Impacts of climate hazards on radiological objects was not part of the CRA. This aspect will be covered during site-specific studies, after the ongoing radiological studies and investigations are completed. Also, the radiological compounds involved are not very mobile in the environment because they are not very soluble in water. It appears that radium or strontium as a sulfate salt was likely the form used in the luminescent mixture in the dials and neither is very soluble.</p> <p>See: https://orau.org/health-physics-museum/collection/radioluminescent/index.html#:~:text=The%20radium%20was%20usually%20in,ZnS%20crystals%20under%20a%20microscope. for more information. Radium sulfate is considered to be insoluble in water.</p> <p>See: https://www.chemicalbook.com/ChemicalProductProperty_EN_CB01424924.htm#:~:text=Radium%20sulfate%20is%20insoluble%20in,the%20most%20insoluble%20sulfate%20known. As such, its migration into the groundwater would be very limited. Strontium sulfate too has very limited solubility in water.</p>
6	Section 5.0	Vulnerability Assessment: Develop a new sub-section to identify existing groundwater plumes and discuss whether migration is anticipated to be a concern under different SLR/GWR scenarios. If some plume movement is anticipated, how much movement is acceptable before additional remedial actions are necessary? Are the anticipated movements limited to within the present-day boundaries of the Shipyard? Discuss how this relates to remediation timelines and residual COC concentrations anticipated to remain in place following remedy completion. Can these concerns be monitored by the existing Basewide Groundwater Monitoring Program (BGMP)? Include that these concerns will be assessed within the site-specific studies.	<p>Assessing the hydrogeology at HPNS will be discussed with the agencies during the planning of the site-specific studies. The Navy's (Draft), <i>A Framework for Assessing Climate Resilience at the Navy's Environmental Restoration Sites</i>, March 28, 2024, suggests groundwater modeling and strategic monitoring as two possible approaches for further assessment of climate hazards and their impacts on site CoCs.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
7	Section 5.3.1	Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs: The CRA indicates that chlorinated volatile organic compounds (CVOCs) in groundwater are projected to attenuate below remedial goals (RGs) by 2035; however, neither the CRA nor the FYR Report include timelines to support this assumption. Revise this sub-section to address this uncertainty and describe how this assumption will be tracked in future FYR Reports and site-specific studies recommended in the CRA.	The CRA states that residual CVOCs (after ongoing or planned source treatment and removal) may persist until 2035, but are not expected to persist through 2065 and their attenuation will be monitored through the ongoing monitoring program. A 100 ppb chlorinated VOCs source should dissipate by approximately 99% over 41 years based on first-order decay and median point decay rates observed at chlorinated solvent natural attenuation sites (Newell et al., 2006). Newell, C. J., Cowie, I., McGuire, T. M., & McNab, W. W. (2006). Multiyear Temporal Changes in Chlorinated Solvent Concentrations at 23 Monitored Natural Attenuation Sites. <i>Journal of Environmental Engineering</i> , 132(6), 653–663. https://doi.org/10.1061/(asce)0733-9372(2006)132:6(653)
8	Section 5.3.1	Potential New Exposure to CVOCs from Vapor Intrusion due to Groundwater Table Rise to 3 feet bgs: Revise this sub-section to include that future site-specific studies will discuss whether GWR within 3 feet of ground surface is anticipated to impact Areas Requiring Institutional Controls (ARICs) for vapor intrusion or preferential pathways post-transfer within each parcel, based on assumed remedial completion timelines.	The CRA states that sewer lines near existing buildings have been removed. Text stating that vapor intrusion will be considered in applicable parcel-specific studies has been added.
9	Section 5.3.5	Potential New Exposure of Bay Ecological Receptors to Heavy Metals, PCBs and PAHs from Erosion due to Storm Surges: Revise this sub-section to discuss how the Navy will assess the condition of the durable covers following the occurrence of storm surges and waves. How will the Navy ensure that erosion is not occurring and that it is not impacting the San Francisco Bay or adjoining properties?	The CRA is a screening level assessment which will be used to identify where further assessment is needed and when. Impacts from storm surges will be addressed in accordance with the long-term monitoring (LTM) plan for each IR site or parcel. Storm events of a certain magnitude trigger an ad hoc inspection with repairs. <u>Under the Emergency Response Plans included in the O&M manuals for Parcels B-1 (Engineering/Remediation Resources Group, Inc. 2016), B-2 (INNOVEX-ERRG Joint Venture 2018), C (Tetra Tech EC, Inc. and Engineering/Remediation Resources Group, Inc. 2017), D-1, (APTIM 2018; 2019), E-2 (ERRG, 2014b) and G (Arcadis U.S., Inc. 2014) and IR-07/18 (ERRG, 2012), the following emergency response</u>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
			<p>procedure is identified in the event of flooding [caused by intense storm events, high sea level, or wave action]:</p> <ol style="list-style-type: none"> 1. <u>Immediately conduct visual inspection of area to assess damage and potential impact.</u> 2. <u>In the event of safety hazard, immediately cordon off the affected area.</u> 3. <u>In the event of slope failure, contact contracted geotechnical consultant, as appropriate, to participate in an evaluation of problem area with 48 hours. If necessary, conduct a geotechnical investigation of the failure in order to develop a corrective action plan.</u> 4. <u>For damage or potential damage to components that affect site integrity, security, or safety, arrange repair or restoration within 2 weeks (weather and conditions permitting) to design conditions and in accordance with construction specifications.</u> 5. <u>Investigate preventive measures.</u> 6. <u>Notify Water Board, CalRecycle [for IR-07/18 and Parcel E-2], ROICC, DTSC, EPA, and CDPH.</u> <p>References:</p> <p>APTIM, 2018, Final Post-Construction Operation and Maintenance Plan, Remedial Action in Parcel D-1, Hunters Point Naval Shipyard, San Francisco, California, March.</p> <p>APTIM, 2019, Final Addendum 01, Post-Construction Operation and Maintenance Plan, Remedial Action in Parcel D-1, Hunters Point Naval Shipyard, San Francisco, California, July.</p> <p>Arcadis U.S., Inc., 2014, Final Operation and Maintenance Plan for Parcel G, Hunters Point Naval Shipyard, San Francisco, California, May 23</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2012, Final Operation and Maintenance Plan for Installation Restoration Sites 07</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
			<p>and 18 in Parcel B, Hunters Point Naval Shipyard, San Francisco, California, October.</p> <p>ERRG. 2014b. Preconstruction Operation and Maintenance Plan for Parcel E-2 Hunters Point Naval Shipyard San Francisco, California. August 2014.</p> <p>ERRG. 2016, Final Operation and Maintenance Plan for Parcel B-1, Hunters Point Naval Shipyard, San Francisco, California, June.</p> <p>Gilbane Federal, 2018, Final Operation and Maintenance Plan, Remedial Action, Parcel UC-3, Hunters Point Naval Shipyard, San Francisco, CA, July.</p> <p>INNOVEX-ERRG Joint Venture, 2018, Final Operation and Maintenance Plan for Parcel B-2, Hunters Point Naval Shipyard, San Francisco, California, July.</p> <p>Tetra Tech EC, Inc. and Engineering/Remediation Resources Group, Inc., 2017, Final Operation and Maintenance Plan for the Durable Covers in Parcel C, Hunters Point Naval Shipyard, San Francisco, California, February</p>
10	Section 5.3.6	<p>Parcel E-2 Remedy Resiliency: Revise this section to discuss the potential influence of the Upland Slurry Wall on GWR in Parcel E-2. Community concerns have been expressed that conventional defensive structures, such as sea walls, may exacerbate flooding risks by creating a physical barrier that prevents risen groundwater from flowing out. If a potential vulnerability is identified, Section 6.0 should be updated to include a site-specific study of Parcel E-2. This study should assess potential impacts to off-site adjoining properties.</p>	<p>The CRA (Appendix A) is a screening assessment and does identify a vulnerability in Parcel E-2. The Navy is aware of the community's concerns from the public comments received. Further studies in this parcel will be discussed with the agencies as part of the site-specific studies planned.</p>
11	Section 6.0	<p>Conclusions and Recommendations: The CRA should include specific, actionable, and measurable recommendations for the site-specific studies at the Shipyard. Detailed suggestions for these recommendations are provided below:</p> <p>a. Include a timeline for completing site-specific studies for each parcel. These studies must be prioritized as soon as possible, and, at minimum,</p>	<p>The Navy will consider the suggestions in Items (a) through (f) during the planning of the site-specific studies with the agencies. The Navy continues to validate the maps and projections in the CRA through ground visits and observations, consolidation of monitoring well construction details, and evaluation of parcel-specific information.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SDFPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
		<p>the studies of each Parcel should be completed prior to the next FYR (anticipated in 2028). Parcel D-1 is anticipated to be vulnerable by 2035, if not earlier, which makes this study particularly pressing (refer to General Comment 1).</p> <p>b. Studies should be completed, at minimum, on a parcel-by-parcel basis if not a site-wide basis to accommodate for groundwater/contaminant interactions across parcels. The currently proposed IR approach neglects the presence of ubiquitous metals across the Shipyard and the possibility that VOC-impacts in soil vapor may not be confined to a specific IR site.</p> <p>c. Specify the minimum scope of the site-specific studies. Each study must include modeling of SLR/GWR; groundwater flow and emergence; overland flow and storm surge (i.e., flooding); and contaminant impacts/mobilization. The modeling must consider site-specific hydrogeology and geology at partially in-filled shoreline and upland areas, and specific remedy components (i.e., at slurry walls). Each study should include an assessment of contamination remaining in-place under durable covers and the impacts such climate vulnerabilities may have on the mobilization of contaminants. Site-specific study results should include an updated conceptual site model for each parcel.</p> <p>d. Include an assessment of contaminants that are not under CERCLA, including petroleum hydrocarbons and PFAS.</p> <p>e. Adequately address the question of long-term protectiveness of each parcel's current remedy and propose additional actions if the study's conclusion finds that long-term protectiveness may be lessened by SLR/GWR. Include an assessment of long-term protectiveness of ARICs for vapor intrusion concerns. Address how on-going monitoring at the Shipyard will complement the proposed actions.</p> <p>f. Include a discussion of the CERCLA process and how much time will be needed to adjust a parcel's remedy if the site-specific study finds that the given remedy is no longer protective.</p>	

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	SFDPH Preliminary Comments dated April 12, 2024	Navy Response
Specific Comments			
12	Section 6.0	Conclusions and Recommendations: The CRA states that changes in the five tidal gauge measurements nearest to the Shipyard (Alameda, Richmond, Redwood, Port Chicago, and San Francisco) and groundwater elevations at the Shipyard will be tracked to assess the impact of the projected vulnerabilities over time. At what gauge measurement or groundwater elevation measurement will the monitoring trigger action at the Shipyard parcels? Which criteria will be used to determine when a change in remedial implementation or action is needed?	The Navy will track sea levels in the nearest five tidal gauges primarily to validate the SLR projections used in the CRA. Currently, all five gauges are tracking well below SLR projections, below the Highest and the Lowest projections in the DRSL range. California Ocean Protection Council (OPC) too has noted that and, in their most recent SLR (2024) guidance, have lowered their projections for 2050, 2060, and 2070, in some cases, by almost 1 foot. During site specific studies, the Navy will discuss the need for any further studies and any changes to remedies. Any changes to remedies will be considered if a site-specific risk assessment shows unacceptable risk to human health or environment.
Minor Comments			
1	Consistency/ Typos	Please correct the following consistency and/or typos: a. Section 2.3, Storm Surges, Bullet 1: Remove the reference to Parcel F. b. Table 5-2: Please revise Table 5-2 to state that Parcel E-2 will be impacted by a 100-year storm to match the text and Table 2-3.	The CRA (Appendix A) text and tables will be revised as suggested for consistency. a. Reference to Parcel F will be removed. b. Parcel E-2 will be identified as impacted in the text and tables.
2	Figure 1-1	Define what “Adaptive Capacity” means.	Adaptive capacity will be defined in the CRA as the ability of current natural and built infrastructure in its current form to withstand the impacts of a climate hazard, without creating any new exposure pathway.



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH

London N. Breed, Mayor
 Grant Colfax, MD, Director of Health
 Patrick Fosdahl, MS, REHS
 Director, Environmental Health

May 14, 2024

Michael Pound
 BRAC Environmental Coordinator, Hunters Point Shipyard
 Base Realignment and Closure
 Program Management Office West
 33000 Nixie Way, Building 50, Suite 207
 San Diego, CA 92147

Subject: SFDPH Comments on the Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

Dear Michael Pound:

The San Francisco Department of Public Health (SFDPH) appreciates the opportunity to review the U.S. Navy's (Navy) Draft Fifth Five Year Review (FYR) Report, as part of our ongoing commitment to support the health and wellbeing of the Bayview-Hunters Point community. The comments presented below are in addition to our letter dated April 12, 2024, and represent the collective perspectives of SFDPH's environmental health and civil engineering experts.

General Comments:

1. **Community Communications:** The Navy's communication with the public is often too technical, particularly when presenting to larger audiences. Speakers should use plain language and support their presentations with clear visual aids to enhance understanding for general audiences. Additionally, the Navy should promptly respond to public requests for information. Improving communication practices will help the Navy build a stronger relationship with the public.
2. **Parcel D-1 Vulnerability:** As stated in our April 12th comment letter, it is imperative that the Federal Facility Agreement (FFA) parties select Remedial Alternative R-2A (Excavation, Disposal, Survey, and Institutional Controls [ICs]) for Parcel D-1. Selecting the "full excavation" remedial alternative will ensure that radiological objects (ROs) are not mobilized in the future due to potential impacts from sea level rise (SLR) and groundwater rise (GWR) at the Shipyard. Specific recommendations to revise the FYR Report are provided below:
 - a. Delete the last sentence in the second paragraph of the "Radiological Surveys and Remediation" sub-section (i.e., "The Focused FS to evaluate additional remedies..."). This sentence incorrectly implies that the remedy for Parcel D-1 has already been determined. The Proposed Plan, which has not yet been drafted, will recommend the Navy's preferred remedial alternative.
 - b. The responses to "Question B" (sub-section 5.5.2) should be revised to acknowledge the newly identified potential route of exposure of ROs in fill material due to SLR/GWR.

HUNTERS POINT SHIPYARD PROGRAM
 49 South Van Ness Avenue, Suite 600, San Francisco, CA 94103
 Phone 415-252-3967

Michael Pound

SFDPH Comments on the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

3. **Maintenance & Repair of Durable Covers:** The sinkholes and subsided areas in Parcels B-1, C, and D-1 impact the short- and long-term protectiveness of the durable cover remedy. The Navy should explain the cause of the subsidence and outline its long-term plan for preventative maintenance and repair. Specific recommendations to revise sections 3.0, 4.0, and 5.0 of the FYR Report are provided below:
 - a. The response to “Question A” should be adjusted given that the asphalt covers need repair in places, as described in each parcel’s “Remedy Operations and Maintenance” sub-sections.
 - b. Revise the “Durable Cover Maintenance” sub-sections to provide (1) more details regarding the maintenance performed to-date in the sinkhole and subsided areas of the asphalt cover and (2) a proposed timeline to implement preventative repairs. Define variances (if any) from the operating costs assumed in the decision documents.
 - c. Update the figures to identify the areas impacted by sinkholes and subsidence. Revise the “Issues, Recommendations, and Follow-up Actions” tables to identify the steps that the Navy will take to prevent these issues from recurring. Fencing off affected areas is not an adequate solution.
4. **Protectiveness Determination:** Review and revise the “Statement of Protectiveness” sub-section for Parcels B1, B-2, and C to explain why the protectiveness determinations were changed from “Will be Protective” in the fourth FYR Report to “Short-Term Protective” in the fifth FYR Report.
5. **Climate Resilience Assessment Hazards:** Revise the “Other Findings” sub-section for each parcel and the FYR Summary Form to include a description of all potential hazards identified in the CRA, such as impacts from storm surge and GWR within 3 feet of ground surface. Discuss the findings of the CRA and recommendations for the completion of site-specific studies. Revise the text to state that site-specific studies are “planned” rather than “recommended” and include a brief description of the minimum scope and timeline for each study. Update the “Issues, Recommendations, and Follow-up Actions” table to reflect revisions made to text and to identify the site-specific studies as follow-up actions.
6. **Sea Wall and Shoreline Revetment:** Revise relevant sections that discuss sea walls and shoreline revetments to include the specific SLR projections that were used during the design-phase and whether shoreline revetments need to be reevaluated given recent updates to the estimates. State if any geotechnical stability analyses were performed during the design-phases that incorporated both SLR and GWR. Are any updates to the geotechnical analyses warranted based on changing projections? Provide copies of the associated geotechnical stability analysis calculations.
7. **Vinyl Chloride and Biodegradation:** Revise sections 3.0 and 4.0 to remove the statements that the presence of vinyl chloride “demonstrates” or “indicates” that biodegradation is occurring; or provide sufficient additional evidence to support these assertions. Although the presence of vinyl chloride indicates that biodegradation has occurred in the past, it does not necessarily indicate that biodegradation is still occurring at a given location.
8. **Parcel C Groundwater Remedy:** Additional remedial actions (RAs) are warranted at plumes that continue to exhibit either stable or inconclusive trends above remediation goals (RGs) since at

Michael Pound

SFDPH Comments on the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

least 2020 (i.e., RU-C1-1, RU-C2-2, RU-C2-3). Although the Navy states its intention to conduct additional RAs in RU-C1 and RU-C2 in general, the Navy should commit to action at these specific plumes. Furthermore, the Navy should review their overall groundwater remedial strategy, considering (1) the timeframes for reaching RGs and (2) the alternative actions required if plumes don't decrease. Revise the text in sub-section 4.4.1.1 to describe the next steps at each of these plumes to reach RGs.

9. **Building Demolition:** Revise relevant sections to address planned building demolition activities. Indicate that a durable cover will be installed where current buildings lack an existing cover component and state whether demolition will include addressing lead hazards in shallow soil, as applicable.
10. **Radiological Object Discoveries:** Revise the "Remedy Implementation" sub-sections for Parcels B-1 and C to discuss the ROs discovered recently during radiological re-testing activities. Revise the "Issues, Recommendations, and Follow-up Actions" tables (Tables 3-8 and 5-8) to reflect revisions to the text.
11. **Per-and-Polyfluorinated Alkyl Substances (PFAS) Impacts:** Revise the "Other Findings" sub-section for each parcel to indicate that the specific areas and media to be investigated for PFAS contamination will be finalized in future PFAS remedial investigation work plan(s). Update the "Issues, Recommendations, and Follow-up Actions" table for each parcel to reflect revisions made to text and to identify the remedial investigation work plan as a follow-up action.
12. **Methane Exceedances & Monitoring:** Revise section 6.0 to assess the protectiveness of the existing landfill cap and gas control system given the elevated concentrations of methane gas reported by the Navy within the past five years. Although the remedy isn't fully complete at Parcel E-2, the interim landfill gas control system constructed in 2003 remains operational. Specific recommendations to revise the FYR Report are provided below:
 - a. Revise the response to "Question A" in sub-section 6.5.1 to address the functionality of the landfill cap and gas control system both currently in-place and anticipated to be completed.
 - b. Revise the "Remedy Operations and Maintenance, Landfill Gas Monitoring" sub-section (section 6.4.2) to identify the locations of (1) the probe(s) where elevated concentrations of methane were detected above action levels (including GMP-07A) and (2) the newly installed perimeter monitoring probe (GMP-54). Describe the locations of the probes with respect to the landfill's northern and western boundaries and any nearby structures. Discuss the Navy's efforts to reduce methane concentrations at the probe(s) where elevated readings have been detected above action levels. Include the locations of the monitoring probes on a figure.
13. **Mercury Impacts to Groundwater and San Francisco Bay:** The on-going FFA party discussions regarding elevated mercury concentrations in groundwater at Parcel B-2 are not adequately addressed within Section 3.0. Specific recommendations to revise the FYR Report are provided below:
 - a. The Mann-Kendall statistical conclusions referenced within sub-section 3.4.3.1 are not consistent with recent (2021 and 2022) groundwater sampling results; the draft 2022 remedial action monitoring report (RAMR) appears to show that mercury concentrations at

Michael Pound

SFDPH Comments on the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

monitoring well IR26MW49A are increasing. Revise this sub-section to include 2021/2022 groundwater monitoring data.

- b. Revise the response to “Question A” in sub-section 3.5.1 to acknowledge (1) the August 20, 2021 Tri-Agency Letter statement that “[t]he FFA regulatory parties reject that the remedial action is either successful or making progress in achieving the groundwater remedial action objective (RAO)” and (2) the ongoing discussions between the FFA parties to reach a resolution to the detected mercury concentrations. Revise the “Issues, Recommendations, and Follow-up Actions” table to reflect revisions to the text.
 - c. The trigger level (TL) for mercury is listed in the FYR Report as 0.94 micrograms per liter (µg/L); however, the current (2019) RWQCB Tier 1 ESL is 0.025 µg/L and the RWQCB’s Water Quality Control Plan (Basin Plan) for the San Francisco Bay includes values such as 0.03 milligrams of mercury per kilogram of fish. Revise the response to “Question B” in sub-section 3.5.2 to acknowledge this new information and discuss the impacts (if any) to protectiveness of the selected remedy.
14. **Technical Assessment “Question B”:** Revise the response to “Question B” for each parcel to clarify and expand upon the Navy’s technical assessment of human health risks as follows:
- a. In the “HHRA Analysis” sub-section, provide a detailed evaluation of the protectiveness of RGs for all identified chemicals of concern (COCs) in a given parcel where current risk-based concentrations (e.g., RSL or VISL) are less than the RGs. For each COC, include (1) appropriate risk-based criteria, (2) whether the COC remaining below the durable cover is within an acceptable risk range, (3) the location(s) of concern, and (4) any relevant remedy component(s) that maintain protectiveness (as applicable). For example, in sub-section 5.5.2.2, discuss whether the lower vapor intrusion screening level (VISL) for trichloroethene (TCE) results in any additional VOC ARICs. For reference, review the fourth FYR Report for a good example of this type of evaluation.
 - b. Within the “HHRA Analysis” sub-section, include an evaluation of action levels for each COC in addition to RGs. Include an action levels column for reference in the “Chemicals of Concern and Remediation Goals” tables (Table 4-1, 5-1, and 6-1).
 - c. Within the “HHRA Analysis” sub-section, identify the COCs being referred to in the following statement regarding possible changes for construction worker exposure “...changes will not affect the RGs...because ICs require identification and management of potential risks to construction workers.” For the affected COCs, provide a discussion regarding whether COCs remaining in place below the durable cover are within an acceptable risk management range. If special health & safety protocols differing from elsewhere at the Shipyard are needed, identify the affected locations. Also update the “Issues, Recommendations, and Follow-up Actions” table to identify the Navy’s plan to tabulate COC concentrations for future use by health and safety professionals.
 - d. Provide a new subsection that evaluates the soil RGs and action levels based on leachability-based criteria (e.g., “soil leaching to groundwater screening levels” published by the RWQCB [2019]) considering the results of the CRA and potential new routes of exposure; assess if the protectiveness of any of the selected remedies will be impacted.

Michael Pound

SFDPH Comments on the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

15. **Changes to Areas Requiring Institutional Controls (ARICs) for VOCs:** The fourth FYR Report identified additional “proposed” VOC ARICs requiring further evaluation at Parcels B-1, B-2, D-1, and G. Revise the “Institutional Controls” sub-section for each affected parcel to discuss the differences between the VOC ARICs depicted in the fifth FYR Report compared to Appendix E of the fourth FYR Report. Review associated figures and confirm that the VOC ARICs are accurate (e.g., Figure 5-2 appears to be missing existing VOC ARICs). Revise the “Issues, Recommendations, and Follow-up Actions” tables (Tables 3-8 and 5-8) to reflect revisions to the text, if applicable.
16. **Redevelopment Plan Reference:** Update all relevant sections to reference the most recent 2018 Redevelopment Plan, instead of the 2010 Redevelopment Plan. Specifically, update the “Site Characterization – Land Use” sub-section and the “Remedial Action Summary and Expected Outcomes” table for each parcel with the latest Redevelopment Plan details.

Specific Comments:

1. **Section 4.4.1.1, Parcel C Remedy Implementation:** Section 4.4.1.1 describes the degradation conditions at plumes RU-C2-1, RU-C2-2, and RU-C2-3 as favorable, moderately conducive, and generally favorable (respectively). Revise the text to define each of these terms and discuss what the differences mean in terms of degradation. Does a “moderately conducive” condition mean that degradation may not be occurring at all or that degradation may only be occurring under certain circumstances?
2. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** Revise this sub-section to provide additional information on the status of the monitoring wells associated with groundwater plumes RU-C1-4 and RU-C5-2. The FYR Report states that these wells were added back to the monitoring program in 2021 at the request of the FFA regulatory parties. Is monitoring continuing at these wells? If not, include the date when FFA approval was received to discontinue monitoring.
3. **Section 4.4.1.1, Parcel C Remedy Implementation, Soil Excavation and Removal:** Revise this sub-section to explain why the sumps identified beneath Building 253 were not removed.
4. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** Revise the third bullet of the RU-C1 sub-section to clarify what the Navy plans to do to “address” the dense non-aqueous phase liquid (DNAPL) source area and dissolved groundwater plume at RU-C1-3.
5. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** Revise the first bullet of the RU-C2 sub-section to (1) state why there are no RAOs for the B-aquifer, (2) acknowledge the ongoing discussions between the FFA parties related to investigating the B-aquifer and the fractured bedrock water-bearing zone (F-WBZ) contamination, and (3) explain the significance of detecting tetrachloroethene (PCE) and other chlorinated compounds within the B-aquifer wells at RU-C2-1. Identify the pending resolution and next steps for investigation as a follow-up item in Table 4-8.
6. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** Monitored natural attenuation (MNA) continues at RU-C2-2; however, PCE concentrations continue to exhibit an increasing trend above both its RG and active treatment criterion (ATC). Revise the sub-section with a commitment by the Navy to perform additional assessment and RA at RU-C2-2.

Michael Pound

SFDPH Comments on the Draft Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated November 2023

7. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** In 2019, the FFA regulatory parties identified the need to further evaluate TCE impacts in the F-WBZ. A draft Work Plan was submitted to the FFA regulatory parties in 2022 and a draft final version is pending issuance by the Navy. Revise the RU-C4 sub-section and Table 4-8 to identify the next steps related to this planned investigation.
8. **Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring:** Revise the fifth bullet of the RU-C5 sub-section to include the conclusion made within the draft 2022 RAMR that “visual trends for source area monitoring well concentrations generally indicate that while some COCs initially decreased in concentration immediately after the 2021 RA, most have rebounded and some have increased above concentrations before the RA.” Revise the text to include that additional RAs will be necessary if this increasing trend is confirmed, following additional monitoring.
9. **Section 4.5.1.1, Question A, Parcel C:** Revise this sub-section to (1) acknowledge that additional investigations and RAs under the 2010 ROD are needed for RU-C1, RU-C2, RU-C4, and RU-C5 and (2) provide a timeline for completion of these required activities. Update Table 4-8 to reflect revisions to text.
10. **Section 5.4.4.1, Parcel G Remedy Implementation, Groundwater Monitoring:** Revise this sub-section to describe the Parcel E IR-36 plume continuation onto Parcel G and the planned RA. Update applicable Parcel G figures to show plume continuation.
11. **Section 5.6.1.3, Site Management Strategy:** Revise this sub-section to provide further details regarding the meaning of the second bullet point (i.e., “The Navy is also planning to optimize...”). What are the Navy’s intentions? If possible, include a specific example.
12. **Section 6.4.1.1, Parcel E Remedy Implementation, Soil Excavation and Removal:** Revise the first sentence of the second paragraph as follows – “...or upon the Navy’s determination to limit excavation [with approval provided in writing by the FFA regulatory parties].” Additionally, include example criteria which might result in the Navy proposing to limit planned excavations.
13. **Section 6.4.2.1, Parcel E-2 Remedy Implementation, Belowground Barrier (Slurry Walls):** Revise this sub-section to incorporate an acknowledgement, as previously noted by the FFA regulatory parties, that (1) the installed Upland Slurry Wall (USW) deviated from its original design and is not functioning properly. Discuss both the deviation and the current measures the Navy is taking to address this matter.

Sincerely,

Ryan Casey, P.E.
Administrative Engineer

CC: Danielle Janda, Navy
Erica Schmandt, Navy
Jamie Egan, Jacobs
Andrew Bain, USEPA

Michael Howley, DTSC
Mary Snow, RWQCB
Susan Philip, DPH
Thor Kaslofsky, OCII

Lila Hussain, OCII
Christina Rain, Langan
Randy Brandt, Geosyntec

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930	Responses By Navy		
Comment By City & County of San Francisco	Code/Organization DPH			Date May 2024	
Project Title and Location Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023				Type of Review	
				X	Draft
					Final
					Other

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
1	General	Community Communications: The Navy's communication with the public is often too technical, particularly when presenting to larger audiences. Speakers should use plain language and support their presentations with clear visual aids to enhance understanding for general audiences. Additionally, the Navy should promptly respond to public requests for information. Improving communication practices will help the Navy build a stronger relationship with the public.	Comment noted.
2	General	<p>Parcel D-1 Vulnerability: As stated in our April 12th comment letter, it is imperative that the Federal Facility Agreement (FFA) parties select Remedial Alternative R-2A (Excavation, Disposal, Survey, and Institutional Controls [ICs]) for Parcel D-1. Selecting the "full excavation" remedial alternative will ensure that radiological objects (ROs) are not mobilized in the future due to potential impacts from sea level rise (SLR) and groundwater rise (GWR) at the Shipyard. Specific recommendations to revise the FYR Report are provided below:</p> <p>a. Delete the last sentence in the second paragraph of the "Radiological Surveys and Remediation" sub-section (i.e., "The Focused FS to evaluate additional remedies..."). This sentence incorrectly implies that the remedy for Parcel D-1 has already been determined. The Proposed Plan, which has not yet been drafted, will recommend the</p>	<p>a. The sentence "<i>The Focused FS to evaluate additional remedies to address radiologically impacted soil at was finalized in 2023 (Innovex-ERRG Joint Venture, 2023) and the Proposed Plan and Amended ROD is pending.</i>" Does not imply that the remedy has already been determined. However, the preceding sentence has been modified to:</p> <p><i>Land use and activity restrictions are currently in place to prohibit land-disturbing activities throughout Parcel D-1 until the LUC-RO remedy is amended to mitigate risk to human health relating to the potential presence of ROs in material below 2 feet.</i></p> <p>b. The newly identified potential route of exposure is discussed in Other Findings because, while the screening level CRA identified the possibility of groundwater rise, it's based on conservative modeling</p>

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
		<p>Navy's preferred remedial alternative.</p> <p>b. The responses to "Question B" (sub-section 5.5.2) should be revised to acknowledge the newly identified potential route of exposure of ROs in fill material due to SLR/GWR.</p>	<p>and requires additional verification before it can be determined that protectiveness is affected. Protectiveness, with respect to the Five-Year Review, is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed) and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors).</p>
3	General	<p>Maintenance & Repair of Durable Covers: The sinkholes and subsided areas in Parcels B-1, C, and D-1 impact the short- and long-term protectiveness of the durable cover remedy. The Navy should explain the cause of the subsidence and outline its long-term plan for preventative maintenance and repair. Specific recommendations to revise sections 3.0, 4.0, and 5.0 of the FYR Report are provided below:</p> <p>a. The response to "Question A" should be adjusted given that the asphalt covers need repair in places, as described in each parcel's "Remedy Operations and Maintenance" sub-sections.</p> <p>b. Revise the "Durable Cover Maintenance" sub-sections to provide (1) more details regarding the maintenance performed to-date in the sinkhole and subsided areas of the asphalt cover and (2) a proposed timeline to implement preventative repairs. Define variances (if any) from the operating costs assumed in the decision documents.</p> <p>c. Update the figures to identify the areas impacted by sinkholes and subsidence. Revise the "Issues, Recommendations, and Follow-up Actions" tables to identify the steps that the Navy will take to prevent these issues from recurring. Fencing off affected areas is not an adequate solution.</p>	<p>Because the Navy currently controls access and exposure to the subsidence areas and is planning on making repairs, protectiveness is not affected. Therefore, the response to Question A will not be changed and it will not be added as an issue/recommendation affecting protectiveness.</p> <p>Repairs of the larger eroded areas that were identified as being outside of the scope of routine O&M are included in the remedy as a whole; however, at this time, the repairs are being deferred until the radiological retesting has been completed to minimize generating extra waste and maximize efficiency. The timing of these repairs is dependent on the retesting timeframe. The detailed repair method is discussed in the O&M documents referenced in the Five-Year Review.</p> <p>The following text has been added to the Durable Cover Operations and Maintenance section of Section 4.4.1.2: The Navy is currently conducting a shoreline assessment study to identify and recommend repairs and/or stabilization of structures and shoreline.</p> <p>The results of the study are pending and until results and recommendations are made, the magnitude and timeframe for repair is unknown at this time.</p> <p>The use of the term "sinkholes" has been replaced with "areas of erosion" or "subsidence areas" to use more technically accurate language.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
4	General	<p>Protectiveness Determination: Review and revise the “Statement of Protectiveness” sub-section for Parcels B1, B-2, and C to explain why the protectiveness determinations were changed from “Will be Protective” in the fourth FYR Report to “Short-Term Protective” in the fifth FYR Report.</p>	<p>The term "Will Be Protective" is used in the case where remedy construction is ongoing, current exposures are under control, and when construction is complete, the remedy will be protective (no issues were identified that would call into question the protectiveness of the remedy under construction). The "Will Be Protective" determination was used in the Fourth Five-Year Review for Parcels B-1, B-2, and C because portions of the remedy were in the process of being implemented.</p> <p>For this Fifth Five-Year Review, because the remedy has been completed or the majority of the remedy is in place (groundwater treatment, durable covers, ICs, and long-term monitoring) “Will Be Protective” is no longer appropriate to use. This Fifth Five-Year Review determined the remedy at B-1 to be Short Term Protective (the remedy is currently protective but additional radiological testing activities are needed to ensure long term protectiveness of the remedy). The remedies at B-2 and The B- Aquifer and Fractured Water Bearing Zone (F-WBZ) areas of Parcel C are “Protectiveness Deferred” (“ (not enough data is available to make a protectiveness determination and the Navy will collect the data and prepare a Five-Year Review Amendment with the updated protectiveness determination).</p>
5	General	<p>Climate Resilience Assessment Hazards: Revise the “Other Findings” sub-section for each parcel and the FYR Summary Form to include a description of all potential hazards identified in the CRA, such as impacts from storm surge and GWR within 3 feet of ground surface. Discuss the findings of the CRA and recommendations for the completion of site-specific studies. Revise the text to state that site-specific studies are “planned” rather than “recommended” and include a brief description of the minimum scope and timeline for each study. Update the “Issues, Recommendations, and Follow-up Actions” table to reflect revisions made to text and to identify the site-specific studies as follow-up actions.</p>	<p>The following text has been added to the Other Findings for respective parcels (3.6.1.2, 4.6.1.2, 5.6.1.2, 6.6.1.2):</p> <p>The CRA estimates that groundwater emergence may occur in [IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas] by the year 2065.</p> <p>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum.</p> <p>However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>potential for increased vapor intrusion is identified in other CERCLA documents, ARICs for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</p> <p>For Parcel E-2, the following text has been added:</p> <p>Although the Parcel E-2 remedy components such as the sea wall were designed for resilience through a 3-foot rise in sea level (similar to the 2065 scenario), a site-specific study is recommended to evaluate the longer-term scenarios such as 2100.</p> <p>The following text has been added to Other Findings for Parcel D-1:</p> <p>The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035. Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe, at a minimum. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025.</p> <p>In addition to the changes listed above for each respective parcel, the following changes have been made to the Other Findings section of the Five-Year Review Summary Form:</p> <p>Climate Change</p> <p>The Navy recognizes climate change is occurring and based on a screening level Climate Resilience Assessment (CRA) (Appendix A), sea level rise (SLR) is the major variable of climate change that could affect the remedies at HPNS.</p> <p>The CRA estimates that groundwater emergence may occur in Parcel D-1 by the year 2035 and in IR-07/18, Parcel B-1, B-2, C, D-1, E, and E-2 wetland areas by the year 2065. However, protectiveness is only affected when increased CERCLA risk attributable to climate hazards has been identified (groundwater is likely to emerge and land use is such that receptors could be exposed and a future unacceptable health or ecological risk has been identified (data collected, validated, and</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>evaluated following CERCLA risk assessment processes resulting in unacceptable risk to receptors). Where the potential for increased vapor intrusion is identified in other CERCLA documents, areas requiring institutional controls (ARICs) for VOCs are present, groundwater is being monitored, and removal of VOCs is occurring either through MNA or active remediation, thus reducing the potential for future vapor intrusion by reducing the source. Therefore, the potential for groundwater emergence does not affect the protectiveness determination in this Five-Year Review.</p> <p>Based on the results of the CRA, the Navy will continue to monitor ongoing groundwater concentration and elevation data onsite through the Basewide Groundwater Monitoring Program (BGMP) and evaluate this data as it relates to the effectiveness of site remedies. The Navy will also regularly evaluate nearby tidal gauge data to verify SLR projections. <u>Additional site-specific assessments are planned which will include verifying mapping projections and evaluating the 2100 timeframe. Parcel D-1 will be prioritized and is scheduled to be initiated in 2025. Additional studies are planned for remaining parcels and a meeting with the Navy and Agencies is planned for November 2024 to discuss the scope and priority of these studies as well as preparation of an adaptation plan, or similar document, if the site-specific studies show that CERCLA-type human health or ecological risk attributable to climate change requires adaptive measures.</u></p> <p>Key climate change milestones include the following:</p> <ul style="list-style-type: none"> • Scoping and Prioritization Meeting – 11/30/2024 • Initiation of Parcel D-1 Study – Spring 2025 <p>Additionally, Parcels UC-1, UC-2, and Parcel D-2 were not initially included in the CRA because the parcels had been transferred, however they were evaluated in the Final CRA. The only impacts identified were minor flooding along the borders during a storm surge in 2065 at Parcels UC-1, UC-2, and D-2.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
6	General	<p>Sea Wall and Shoreline Revetment: Revise relevant sections that discuss sea walls and shoreline revetments to include the specific SLR projections that were used during the design-phase and whether shoreline revetments need to be reevaluated given recent updates to the estimates. State if any geotechnical stability analyses were performed during the design-phases that incorporated both SLR and GWR. Are any updates to the geotechnical analyses warranted based on changing projections? Provide copies of the associated geotechnical stability analysis calculations.</p>	<p>The SLR projections used in the remedy design for Parcel E-2 was added to the Five-Year Review as discussed in response to General Comment #5. No additional geotechnical evaluation was conducted for this five-year review as it is outside of the scope of the Five-Year Review.</p> <p>Geotechnical evaluations were conducted as part of the Design Basis Reports for the following parcels:</p> <ul style="list-style-type: none"> • Parcel B-2 (ChaduxTt, 2010 – Attachment 3) • Parcel E-2 (ERRG, 2014 – Appendix E) • Parcel E (CES, 2018 – Appendix F) <p>References:</p> <p>Engineering/Remediation Resources Group, Inc. (ERRG). 2014. Design Basis Report, Parcel E-2, Hunters Point Naval Shipyard, San Francisco, California. Final. August 15. Accessible at: https://administrative-records.navfac.navy.mil/Public_Documents/SOUTHWEST/HUNTERS_POINT_NS/N00217_005165.PDF</p> <p>ChaduxTt. 2011. Remedial Design Package, Parcel B (Excluding Installation Restoration Sites 7 and 18) Hunters Point Naval Shipyard, San Francisco, California. Revised Final. July. Accessible at: https://administrative-records.navfac.navy.mil/Public_Documents/SOUTHWEST/HUNTERS_POINT_NS/N00217_002262.PDF</p> <p>Construction Engineering Services, LLC. (CES). 2018a. Remedial Design Package, Parcel E, Hunters Point Naval Shipyard, San Francisco, California. Final. May. Accessible at: https://administrative-records.navfac.navy.mil/Public_Documents/SOUTHWEST/HUNTERS_POINT_NS/N00217_005931.PDF</p>

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
7	General	Vinyl Chloride and Biodegradation: Revise sections 3.0 and 4.0 to remove the statements that the presence of vinyl chloride “demonstrates” or “indicates” that biodegradation is occurring; or provide sufficient additional evidence to support these assertions. Although the presence of vinyl chloride indicates that biodegradation has occurred in the past, it does not necessarily indicate that biodegradation is still occurring at a given location.	<p>This statement has been removed from Section 3.5.1 in relation to Parcel B-1 groundwater. Note that the work being conducted at Building 123 will remove VOC source material.</p> <p>The discussion in Section 4.1.1.1 for RU-C1-1 has been changed to: “...Benzene, PCE, TCE, and VC exceeded RGs in March and benzene and PCE exceeded the RGs in September. PCE also exceeded ATC in March but not in September. The presence of VC indicates that biodegradation <u>has occurred in the past</u>. Performance monitoring is expected to continue until data are statistically less than ATCs. Based on data up to December 2021 PCE data is statistically higher than the ATC; however, statistical trends indicate it is probably decreasing (IGI, 2023). <u>Conditions are generally conducive to anaerobic degradation indicated by depleted dissolved oxygen (DO, less than 1 mg/L), presence of dissolved redox-sensitive metals (iron and manganese), and methane. The presence of ethene or ethane also indicates that complete biotic or abiotic degradation is occurring (IGI, 2023).</u>”</p>
8	General	Parcel C Groundwater Remedy: Additional remedial actions (RAs) are warranted at plumes that continue to exhibit either stable or inconclusive trends above remediation goals (RGs) since at least 2020 (i.e., RU-C1-1, RU-C2-2, RU-C2-3). Although the Navy states its intention to conduct additional RAs in RU-C1 and RU-C2 in general, the Navy should commit to action at these specific plumes. Furthermore, the Navy should review their overall groundwater remedial strategy, considering (1) the timeframes for reaching RGs and (2) the alternative actions required if plumes don’t decrease. Revise the text in sub-section 4.4.1.1 to describe the next steps at each of these plumes to reach RGs.	<p>Section 4.4.1.1 has been revised to include which documents each respective study will be included in and the estimated schedule. The text has been revised as follows:</p> <p>RU-C1: [T]he Navy is evaluating options to treat the DNAPL source area at <u>Building 253</u> and, subsequently, the associated groundwater plume. <u>This work is anticipated in 2031.</u></p> <p>RU-C2: The Navy plans to address the soil RAOs for the potential ongoing A-aquifer groundwater source (ECC-Insight, 2019) as documented in the approved in the Parcel C Phase III Work Plan. <u>Fieldwork is anticipated in late 2027/early 2028.</u></p> <p>Page 4-8 for the Soil Vapor Extraction Monitoring: “[T]he Navy is in the process of reviewing the strategy for addressing soil gas at all Parcel C areas in conjunction with additional in situ groundwater remediation activities that are ongoing (ECC-Insight and CDM Smith, 2019). <u>The work plan for post-remediation soil gas surveys at Parcel C is anticipated for spring 2029, and fieldwork is anticipated in 2029-2030.</u></p>

9	General	<p>Building Demolition: Revise relevant sections to address planned building demolition activities. Indicate that a durable cover will be installed where current buildings lack an existing cover component and state whether demolition will include addressing lead hazards in shallow soil, as applicable.</p>	<p>Building demolition would be required to comply with applicable federal and state requirements as well as the ICs for each parcel. Details regarding building demolition will be developed during work planning which has yet to be completed, therefore cannot be included in the Five-Year Review. The additional information about building demolition and Building Addendum applicability has been added to Section 1.4.3.1 as follows:</p> <p>... Following the recommendation from the Fourth Five-Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs for soil and building structures, which concluded that the current RGs are protective for all future land users (Navy, 2020a, 2020b). <u>There was Agency disagreement over the calculation methods for building RGs; however, the Navy is planning on demolishing all radiologically-impacted buildings at each Parcel in response to a letter from the City of San Francisco's Office of Community Investment and Infrastructure, dated February 3, 2022, requesting that, before transferring the remaining Navy-owned property at HPNS, the Navy must demolish all remaining buildings (both radiologically impacted and nonradiologically impacted) on that property except for five small structures on the National Historic Register (OCII, pers. comm., 2022). The demolition and disposal of radiologically-impacted buildings will be completed under CERCLA. Details for managing radiological building materials during demolition will be documented in work plans for regulatory agency review. Because this is not an issue affecting protectiveness but will require a post-ROD change to document the increased cost, Explanations of Significant Differences will be prepared for each Parcel, as appropriate. Radiological retesting is planned and/or currently underway to verify that the soil RGs, which were determined to be protective and remain valid, have been met for each parcel that was identified in the Fourth Five-Year Review.</u></p> <p>Reference:</p> <p>Office of Community Investment and Infrastructure (OCII). 2022. Personal communication (letter) to Kimberly A. Ostrowski, Director, Naval Facilities Engineering Command, Base Realignment and Closure Program Management Office, West. <i>RE: Demolition of the Existing Non-Historic Buildings at the former Hunters Point Naval Shipyard in San Francisco, California.</i> February 3.</p>
---	---------	---	--

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
10	General	Radiological Object Discoveries: Revise the “Remedy Implementation” sub-sections for Parcels B-1 and C to discuss the ROs discovered recently during radiological re-testing activities. Revise the “Issues, Recommendations, and Follow-up Actions” tables (Tables 3-8 and 5-8) to reflect revisions to the text.	Comment acknowledged. There is a data cutoff for each Five-Year review and the radiological object discoveries fall outside of this date (11/1/2023) and does not have an immediate effect on human health or the environment. The discovery of the radiological object will be incorporated in the radiological RACR and next Five-Year Review.
11	General	Per- and-Polyfluorinated Alkyl Substances (PFAS) Impacts: Revise the “Other Findings” sub-section for each parcel to indicate that the specific areas and media to be investigated for PFAS contamination will be finalized in future PFAS remedial investigation work plan(s). Update the “Issues, Recommendations, and Follow-up Actions” table for each parcel to reflect revisions made to text and to identify the remedial investigation work plan as a follow-up action.	<p>The following was added to the Five-Year Review Summary Form under Other Findings:</p> <p>Per- and Polyfluoroalkyl Substances</p> <p>The Navy is in the process of investigating per- and polyfluoroalkyl substances (PFAS) from historical use of PFAS-containing materials. Potential exposure pathways are under control through existing remedy components (institutional controls and durable covers) and data indicate that there is likely no imminent CERCLA risk while PFAS are investigated under the CERCLA process. The following areas are under investigation for PFAS:</p> <ul style="list-style-type: none"> • Parcels B-1, B-2, C, D-1, G, E, and E-2: A-aquifer groundwater • Parcel B-1: IR-10 (Battery and Metal Plating Shop) • Parcel C: Building 215, Fire Station • Parcel D-1: Poseidon Area (Buildings 377, 384, 385, and 387), IR-69 (Bilge Water Pump House), and IR-70 (Former drum and tank storage area) • Parcel G: IR-09 (Pickling and Plating Yard) <p><u>Key PFAS investigation milestones include:</u></p> <ul style="list-style-type: none"> • Final Basewide Remedial Investigation (RI) Work Plan – 4/30/2025 • RI Fieldwork – Spring/Summer 2025 • Final Basewide RI Report – 8/31/2026

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
12	General	<p>Methane Exceedances & Monitoring: Revise section 6.0 to assess the protectiveness of the existing landfill cap and gas control system given the elevated concentrations of methane gas reported by the Navy within the past five years. Although the remedy isn't fully complete at Parcel E-2, the interim landfill gas control system constructed in 2003 remains operational. Specific recommendations to revise the FYR Report are provided below:</p> <ol style="list-style-type: none"> Revise the response to "Question A" in sub-section 6.5.1 to address the functionality of the landfill cap and gas control system both currently in-place and anticipated to be completed. Revise the "Remedy Operations and Maintenance, Landfill Gas Monitoring" sub-section (section 6.4.2) to identify the locations of (1) the probe(s) where elevated concentrations of methane were detected above action levels (including GMP-07A) and (2) the newly installed perimeter monitoring probe (GMP-54). Describe the locations of the probes with respect to the landfill's northern and western boundaries and any nearby structures. Discuss the Navy's efforts to reduce methane concentrations at the probe(s) where elevated readings have been detected above action levels. Include the locations of the monitoring probes on a figure. 	<p>The Five-Year Review has been revised to summarize additional work related to methane extraction, reduction, and delineation and a technical memorandum has been added to this Five-Year Review. The following text was added to Section 6.4.2.2 under Landfill Gas Monitoring:</p> <p>On June 21, 2023, the Navy detected a methane gas reading above the State of California action level at an HPNS landfill gas monitoring probe (GMP-07). The probe is located inside the <u>newly installed landfill cover and is no longer representative of a perimeter monitoring point. In order to confirm that the methane levels are below action levels at a boundary location, a new monitoring probe was installed on October 13, 2023 (GMP-54). Measurements were collected in October through December with no detections of methane with the exception of a reading of 0.1 percent on October 31, below the action level of 5 percent by volume. Details and data are provided in Appendix G.</u></p> <p>landfill perimeter. It is approximately 200 feet southeast of the UCSF compound, which borders the Parcel E-2 boundary.</p>
13	General	<p>Mercury Impacts to Groundwater and San Francisco Bay: The on-going FFA party discussions regarding elevated mercury concentrations in groundwater at Parcel B-2 are not adequately addressed within Section 3.0. Specific recommendations to revise the FYR Report are provided below:</p> <ol style="list-style-type: none"> The Mann-Kendall statistical conclusions referenced within sub-section 3.4.3.1 are not consistent with recent (2021 and 2022) groundwater sampling results; the draft 2022 remedial action monitoring report (RAMR) appears to show that mercury concentrations at monitoring well IR26MW49A are increasing. Revise this sub-section to include 2021/2022 groundwater monitoring data. Revise the response to "Question A" in sub-section 3.5.1 to acknowledge (1) the August 20, 2021 Tri-Agency Letter statement that "[t]he FFA 	<p>From the Navy's perspective, there are multiple lines of evidence presented in the Five-Year Review suggest the concentrations observed in groundwater are unlikely to exceed 0.6 µg/L in Bay surface water. However, as discussed in an April 25, 2024 meeting with Agency representatives (Regional Water Board, US EPA Region 9, and Department of Toxic Substances Control [DTSC]), the Navy agreed to "Protectiveness Deferred" determination. Several changes to the discussion related to Parcel B-2 were made and are provided after responses to specific comments.</p> <ol style="list-style-type: none"> Additional monitoring data was added to the evaluation (see below) The concerns raised by the agencies have been added (see below)

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
		<p>regulatory parties reject that the remedial action is either successful or making progress in achieving the groundwater remedial action objective (RAO)” and (2) the ongoing discussions between the FFA parties to reach a resolution to the detected mercury concentrations. Revise the “Issues, Recommendations, and Follow-up Actions” table to reflect revisions to the text.</p> <p>c. The trigger level (TL) for mercury is listed in the FYR Report as 0.94 micrograms per liter (µg/L); however, the current (2019) RWQCB Tier 1 ESL is 0.025 µg/L and the RWQCB’s Water Quality Control Plan (Basin Plan) for the San Francisco Bay includes values such as 0.03 milligrams of mercury per kilogram of fish. Revise the response to “Question B” in sub-section 3.5.2 to acknowledge this new information and discuss the impacts (if any) to protectiveness of the selected remedy.</p>	<p>c. The trigger level for mercury is 0.6 µg/L as listed in the ROD. The 0.94 µg/L National Recommended Water Quality Criteria (NRWQC) concentration was presented as an additional comparison level to put the groundwater concentrations in context.</p> <p>The Protectiveness Statement has been changed to:</p> <p>A protectiveness determination cannot be made because there is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater. In order to make a protectiveness determination, the following actions needs to be made: evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further evaluation. A primary document presenting the path forward will be finalized as soon as practicable but no later than July 31, 2025. The FFA parties will have discussions, as appropriate, prior to scoping and developing the primary document.</p> <p>The concerns raised by the Agencies regarding the success of the remedy have been added after the final paragraph of Section 3.4.3.1, discussion of In Situ Stabilization of Mercury in Groundwater at IR-26 as follows:</p> <p>After completion of the 3-year post-ISS treatment performance monitoring, the FFA regulatory agencies (EPA Region 9, DTSC, and Regional Water Board) released a tri-agency letter on November 23, 2021 which reiterated that “mercury concentrations in groundwater along the San Francisco Bay margin consistently exceed the trigger level. Therefore, in-situ stabilization (ISS) has failed to minimize or prevent unacceptable discharge of mercury to the San Francisco Bay. Consequently, additional treatment options need to be screened, evaluated, and pursued by the Navy via the development of a new primary document work plan.” (EPA, DTSC, and Regional Water Board, 2021).</p> <p>As discussed at the April 25, 2024 meeting, the FFA regulatory parties assumed that the Navy has the authority to “optimize” ISS (e.g., use of a larger rig in areas of prior injection refusal) and the Navy recognizes that EPA does not oppose any Navy attempt to do so, as long as such action is</p>

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>timely and completed prior to July 31, 2025. As stated in the November 23, 2021 tri-agency letter, the Navy also recognizes that EPA continues to expect that additional treatment options need to be screened, evaluated, and pursued by the Navy.</p> <p>While there are continued exceedances of the TL in groundwater, the Navy believes the following provides lines of evidence that the residual concentrations in mercury in groundwater are not likely to result in a concentration above 0.6 µg/L in the Bay surface water:</p> <ul style="list-style-type: none"> • Completion of source removal in 2008 via a time-critical removal action (Insight, 2009) • Partial success of the in-situ stabilization (ISS) as evidenced by reducing the extent of mercury exceedances of the TL from 3 performance monitoring locations to 2 performance monitoring locations and decreasing concentrations in one of the remaining locations (IR26MW49A). A time-series plot of data through 2023 for IR26MW49A, IR26MW51A, and IR26MW71A is presented on Figure 3-7. Mercury concentrations during the last 5 years of monitoring have been below historical maximums and are consistently below 10 times the HGAL. • The limited extent of impacted groundwater; IR26MW71A and IR26MW49A are approximately 45 feet apart and IR26MW49A is approximately 88 feet from IR26MW51A with no exceedances. • Comparison of groundwater quality parameters to Bay surface water quality parameters (temperature and dissolved oxygen, Table 3-4) indicate that the groundwater is not representative of Bay water because groundwater temperature is consistently warmer than surface water, and dissolved oxygen is consistently lower than surface water. <p>However, because there is uncertainty in the concentration at the exposure point and because the ISS remedy did not reduce the concentration in groundwater to below 0.6 µg/L at all monitoring wells, additional data collection, remedy optimization, and/or additional remedial alternatives/treatment that have been screened for further</p>

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>evaluation are necessary to determine whether the remedy is protective of the Bay.</p> <p>Section 3.5.1.3 (Technical Question A, Is the remedy functioning as intended by the decision document) has been modified as follows:</p> <p>3.5.1.3 Parcel B-2</p> <p>Yes. The ISS injections did not effectively reduce mercury in two locations (IR26MW49A and IR26MW71A) to below the TL of 0.6 µg/L. Although mercury continues to exceed TLs in groundwater collected from downgradient monitoring wells, data demonstrating that mercury concentrations in surface water (the ultimate receptor) are below the HGAL of 0.6 µg/L are lacking. The RAO is stated as follows:</p> <p>... [no change from existing text]</p> <p>Protectiveness is not affected based on the following rationale: Data at the groundwater-surface water interface has not been collected; however, from the Navy's perspective, it is not expected that mercury exceeds 0.6 µg/L based on the following rationale:</p> <ul style="list-style-type: none"> • Source concentrations in soil have been removed during the IR-26 Mercury Removal TCRA (Insight, 2009). • Although dissolved mercury in groundwater exceeds the TL in two locations, Mann-Kendall analysis indicates it is decreasing at one location (KMJV, 2021), indicating partial success of the ISS remedy at minimizing migration to the surface water. • The TL is the Hunters Point groundwater ambient level (HGAL), which is not a risk-based concentration, formal RG, or ARAR according to the ROD Amendment (Navy, 2009). • The screening of groundwater data against the TL or other surface water benchmarks, such as the National Recommended Water Quality Criteria (NRWQC; USEPA, 2023), conservatively assumes that ecological receptors are directly exposed to measured concentrations in groundwater. However, there will be a mixing zone where groundwater interfaces with surface water. The extent of that zone is unknown, but mixing is expected to occur, and the concentrations

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>would decrease with distance from the mixing zone and tidal action. Site-specific mixing factors can range from 1 to several thousand. For example, USEPA uses a default mixing and attenuation factor of 20 to address the dilution of soil leachate as it moves through the groundwater aquifer (USEPA, 1996). Furthermore, mixing studies conducted by State of Washington, Department of Ecology (2009) found that the majority of the reduction in porewater concentrations was because of dilution by surface water and averaged 90 percent (that is, a dilution factor of 0.1). Assuming a similar dilution factor, the maximum post-injection detected concentration of dissolved mercury (8.55 µg/L) would be 0.855 µg/L, which does not exceed the NRWQC of 0.94 µg/L (USEPA, 2023).</p> <ul style="list-style-type: none"> • The post-treatment concentrations after 2018 have consistently been lower than 10 times the 0.6 µg/L TL at both IR26MW49A and IR26MW71A (Figure 3-7). • Groundwater quality parameters (temperature and dissolved oxygen) indicate that the water in sentinel wells IR26MW49A, IR26MW50A, IR26MW51A, and IR26MW71A are not representative of surface water (Table 3-4). <p>Review of annual O&M inspections, historical documents... [no change from original text].</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 3-9 (Parcel B Issues, Recommendations, and Follow-up Actions):</p> <p>Issue: There is uncertainty related to the concentrations of mercury discharging to the Bay from Parcel B-2, IR-26 groundwater</p> <p>Recommendation: Evaluate all existing data to determine a path forward for additional data collection, remedy optimization, and/or remedial alternatives/treatment that have been screened for further evaluation. Prepare a primary document presenting the path forward.</p> <p>Milestone Date: 10/31/2025</p> <p>Affects Protectiveness: Protectiveness Deferred</p>

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
14.	General	<p>Technical Assessment "Question B": Revise the response to "Question B" for each parcel to clarify and expand upon the Navy's technical assessment of human health risks as follows:</p> <ul style="list-style-type: none"> a. In the "HHRA Analysis" sub-section, provide a detailed evaluation of the protectiveness of RGs for all identified chemicals of concern (COCs) in a given parcel where current risk-based concentrations (e.g., RSL or VISL) are less than the RGs. For each COC, include (1) appropriate risk-based criteria, (2) whether the COC remaining below the durable cover is within an acceptable risk range, (3) the location(s) of concern, and (4) any relevant remedy component(s) that maintain protectiveness (as applicable). For example, in sub-section 5.5.2.2, discuss whether the lower vapor intrusion screening level (VISL) for trichloroethene (TCE) results in any additional VOC ARICs. For reference, review the fourth FYR Report for a good example of this type of evaluation. b. Within the "HHRA Analysis" sub-section, include an evaluation of action levels for each COC in addition to RGs. Include an action levels column for reference in the "Chemicals of Concern and Remediation Goals" tables (Table 4-1, 5-1, and 6-1). d. Within the "HHRA Analysis" sub-section, identify the COCs being referred to in the following statement regarding possible changes for construction worker exposure "...changes will not affect the RGs...because ICs require identification and management of potential risks to construction workers." For the affected COCs, provide a discussion regarding whether COCs remaining in place below the durable cover are within an acceptable risk management range. If special health & safety protocols differing from elsewhere at the Shipyard are needed, identify the affected locations. Also update the "Issues, Recommendations, and Follow-up Actions" table to identify the Navy's plan to tabulate COC concentrations for future use by health and safety professionals. e. Provide a new subsection that evaluates the soil RGs and action levels based on leachability- based criteria (e.g., "soil leaching to groundwater screening levels" published by the RWQCB [2019]) considering the 	<ul style="list-style-type: none"> a) As indicated in the Five-Year Review text for Technical Assessment Question B, the protectiveness of the RGs was evaluated by comparing the RGs that were developed for the project as human health protective levels to risk-based screening levels based on current toxicity and exposure assumptions consistent with the exposure scenarios used to develop the RGs. The RGs that exceed current risk-based screening levels were identified on the comparison tables, as referenced in the text. <p>The text did not discuss each RG/chemical individually, but directed the reader to the table providing the values and the comparison. If the current risk-based levels are higher or similar to the RGs, the RGs are considered protective based on current risk assessment practices. As discussed in the FYR, in some cases the current risk-based levels are lower than the RGs, indicating if a receptor is exposed to the media at the RG there could potentially be unacceptable risks. However, as also discussed in the FYR, ICs and/or durable covers are in place in these cases limiting potential exposure, and therefore since there can be no exposure, there is no unacceptable risk and protectiveness remains. Risk evaluations were not performed to evaluate exposure to the material beneath the durable cover (to determine if the COC remaining below the durable cover is within an acceptable risk range) as there is no current exposure to the material remaining below the durable cover and therefore no unacceptable risk. Data was not compared to the current risk-based screening levels, the evaluation of protectiveness was performed by evaluating the protectiveness of the remedy.</p> <ul style="list-style-type: none"> b) The action levels are used as criteria to guide active remediation within applicable areas of Parcel C and are not specified in the respective ROD as an ARAR, human health or environmental risk-based value. Therefore, it is not appropriate to evaluate the action levels in Question B. c) The changes in the HHRA analysis for the construction worker would be associated with changes in construction worker exposure parameter values (such as skin surface area and body weight) and

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
		results of the CRA and potential new routes of exposure; assess if the protectiveness of any of the selected remedies will be impacted.	<p>changes in toxicity values. Text in respective HHRA analyses (3.5.2.2, 4.5.2.2, and 5.5.2.2) has been added as follows:</p> <p>There may be changes with HHRA analysis for the construction worker scenario. Changes in exposure parameter values would likely only result in a small change to HHRA results since standard construction worker exposure factors have not changed significantly since the RI was prepared (not orders of magnitude). The following construction worker exposure parameter values have changed since the original HHRA was prepared:</p> <ul style="list-style-type: none"> • The construction worker body weight used in the HHRA was 70 kg, however, the adult body weight used in HHRA's based on current EPA guidance (EPA, 2014) would be 80 kg. • The skin surface area for a construction worker exposed to soil used in the HHRA was 5,700 cm², however based on current EPA guidance (EPA, 2014), a construction worker skin surface area exposed to soil is 3,527 cm². • The soil to skin adherence factor used in the HHRA for a construction worker was 0.8 mg/cm², the soil to skin adherence factor for a construction worker used in a current HHRA would be 0.3 mg/cm² (the 95th percentile adherence factor for construction workers, from EPA, 2004). • The skin surface area for exposure to groundwater used in the HHRA was 2,370 cm². A current HHRA would use a skin surface area of 6,032 cm² (the weighted average of mean values for head, hands, forearms, and lower legs, from EPA, 2011). • Additionally, for inhalation exposures for both groundwater and soil, inhalation toxicity values are now presented and used in mg/m³ (non-cancer) or 1/(µg/m³) for cancer, and therefore the intake equations no longer incorporate inhalation rate. <p>Toxicity values could result in larger changes (potential orders of magnitude changes), such as for TCE, for which toxicity values were updated in 2009 after the initial HHRA was completed.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p><u>References:</u></p> <p>EPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment (Final). EPA/540/R/99/005. July.</p> <p>EPA, 2011. Exposure Factors Handbook: 2011 Edition. National Center for Environmental Assessment, Washington, DC; EPA/600/R-09/052F. September.</p> <p>EPA, 2014. Human Health Evaluation Manual, Supplemental Guidance: Update of Standard Default Exposure Factors, OSWER Directive 9200.1-120, February 6.</p> <p>d) The CRA was a screening-level evaluation and the type of assessment requested is not feasible for this Five-Year Review. This suggestion will be considered when developing the planned site-specific studies.</p>
15	General	<p>Changes to Areas Requiring Institutional Controls (ARICs) for VOCs:</p> <p>The fourth FYR Report identified additional “proposed” VOC ARICs requiring further evaluation at Parcels B-1, B-2, D-1, and G. Revise the “Institutional Controls” sub-section for each affected parcel to discuss the differences between the VOC ARICs depicted in the fifth FYR Report compared to Appendix E of the fourth FYR Report. Review associated figures and confirm that the VOC ARICs are accurate (e.g., Figure 5-2 appears to be missing existing VOC ARICs). Revise the “Issues, Recommendations, and Follow-up Actions” tables (Tables 3-8 and 5-8) to reflect revisions to the text, if applicable.</p>	<p>The existing and ARICs requiring further evaluation based on the Fourth Five-Year Review have been added to Figures 1-4, 3-2, and 5-2.</p> <p>One of the objectives of the Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123 (September 2023) is to utilize data post-Remedial Action (RA) soil gas data and compare to updated soil gas action levels (SGALs) to evaluate ARICs for VOC vapors. This is in accordance with the Fourth Five-Year Review recommendations. The revised preliminary residential SGALs will be used as a first-tier screening tool in the post-removal vapor intrusion (VI) Human Health Risk Assessment (HHRA) to determine grid blocks that may require additional evaluation. Based on the results of the first-tier data screening, a second-tier evaluation may be needed. The second-tier evaluation will involve use of site-specific or modeled attenuation factors based on site-specific chemical, microbial, and /or geotechnical data. Hence, the results of the post-RA VI HHRA will be used to evaluate the VI ARICs for IR-10 and will be presented in the IR-10 RACR.</p> <p>Details for this methodology is described in Section 8 of Final Remedial Action Work Plan for Parcel B-1, IR Site 10, Building 123 (September 2023).</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>Table 3-4 (now 3-5) has been updated to indicate that this issue/recommendation is ongoing, the work plan was finalized in September 2023 and fieldwork is underway.</p> <p>Reevaluating the SGALs and ARIC boundaries is not carried forward as an Issue/Recommendation in the Fifth Five-Year Review because the LUC RD lays out the pathway to modify the ARICs by the FFA signatories, implying that all need to agree on the change prior to making modifications to the ARIC. The following is an excerpt from the Parcel G LUC RD (emphasis added):</p> <p>Alternatively, the ARIC for VOC vapors may be modified <i>by the FFA signatories</i> as the soil and groundwater contamination areas that are producing unacceptable vapor inhalation risks are reduced over time or in response to further soil, vapor, and groundwater sampling and analysis for VOCs that establishes that areas now included in the ARIC for VOC vapors do not pose an unacceptable potential exposure risk due to VOC vapors.</p> <p>This is also emphasized in current status to the Recommendation from the Fourth Five-Year Review:</p> <p>No changes to the VOC ARIC are planned for Parcel D-1 or G at this time. Because attenuation of VOCs is likely to occur, ARICs for VOC vapors, and likewise SGALs that are the basis of the ARICs, in Parcels D-1 and G will be re-evaluated during preparation for property transfer. While there is disagreement about the method to calculate the SGALs, which may affect ARIC boundaries, the final ARICs that will be surveyed and recorded in quitclaim deeds and covenants to restrict land use will be established in agreement with the BCT.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
16	General	<p>Redevelopment Plan Reference: Update all relevant sections to reference the most recent 2018 Redevelopment Plan, instead of the 2010 Redevelopment Plan. Specifically, update the “Site Characterization – Land Use” sub-section and the “Remedial Action Summary and Expected Outcomes” table for each parcel with the latest Redevelopment Plan details.</p>	<p>References to the 2018 Redevelopment Plan were made to all Site Characterization – Land Use subsections. The following changes have been made to the Remedial Action Summary and Expected Outcome tables:</p> <ul style="list-style-type: none"> • Table 3-3 Parcel B: Planned future use: Predominantly residential and shoreline open space • Table 4-3: Parcel C: Planned future use: Multi-use, including areas of predominantly arts related/commercial/ retail/ residential and research and development and shoreline open space • Table 4-4: Parcel UC-2: Planned future use: Multi-use, including mixed residential/arts/ commercial/retail and research and development (industrial) • Table 5-3: Parcel D-1 and UC-1: Planned future Use: Multi-use including residential, research and development, and open space. • Table 5-4: Parcel G: Planned future Use: Multi-use including residential, research and development, and open space. • Table 6-4: Parcel E: Planned future use: Shoreline open space, and multi-use including residential, research and development, and open space. • Table 6-5: Parcel E-2: Planned future use: Shoreline open space • Table 6-6: Parcel UC-3: Planned future use: Multi-use including residential, research and development, and open space.
1	Specific	<p>Section 4.4.1.1, Parcel C Remedy Implementation: Section 4.4.1.1 describes the degradation conditions at plumes RU-C2-1, RU-C2-2, and RU-C2-3 as favorable, moderately conducive, and generally favorable (respectively). Revise the text to define each of these terms and discuss what the differences mean in terms of degradation. Does a “moderately conducive” condition mean that degradation may not be occurring at all or that degradation may only be occurring under certain circumstances?</p>	<p>The concentrations of COCs are the primary indicators of degradation. The text referenced is a line of evidence supporting monitored natural attenuation as a qualitative description of the aquifer conditions under which degradation of COCs can occur. Moderately conducive means that the conditions in the aquifer are such that degradation can occur but not a definitive indicator that it is occurring.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
2	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: Revise this sub- section to provide additional information on the status of the monitoring wells associated with groundwater plumes RU-C1-4 and RU-C5-2. The FYR Report states that these wells were added back to the monitoring program in 2021 at the request of the FFA regulatory parties. Is monitoring continuing at these wells? If not, include the date when FFA approval was received to discontinue monitoring.	The sentence has been revised to: B-aquifer monitoring was reinstated <u>and is ongoing.</u>
3	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Soil Excavation and Removal: Revise this sub- section to explain why the sumps identified beneath Building 253 were not removed.	The subsection was revised to: the suspected source (sumps within Building 253) was confirmed with the identification of dense nonaqueous phase liquid (DNAPL) in the center of the former paint room (within Building 253), <u>which was outside of the scope of the RA</u> ; consequently...
4	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: Revise the third bullet of the RU-C1 sub-section to clarify what the Navy plans to do to “address” the dense non- aqueous phase liquid (DNAPL) source area and dissolved groundwater plume at RU-C1-3.	The Navy has plans to address the DNAPL under Building 253. The DNAPL is the likely source of the RU-C1 plume. This NAPL area was not discovered at the time of the Parcel C ROD signature. Consequently, the planning and implementation of a remedy has not been definitively set. Remediation of the DNAPL source area under Building 253, is necessary before addressing the dissolved groundwater plume.
5	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: Revise the first bullet of the RU-C2 sub-section to (1) state why there are no RAOs for the B-aquifer, (2) acknowledge the ongoing discussions between the FFA parties related to investigating the B-aquifer and the fractured bedrock water-bearing zone (F-WBZ) contamination, and (3) explain the significance of detecting tetrachloroethene (PCE) and other chlorinated compounds within the B-aquifer wells at RU-C2-1. Identify the pending resolution and next steps for investigation as a follow-up item in Table 4-8.	The following change was made to the first bullet of RU-C2: <ul style="list-style-type: none"> Monitoring in the B-aquifer was discontinued in September 2020 because there were no RAOs for the B-aquifer in the ROD due to the beneficial reuse exemption discussed in Section 1.3.4.2 (Navy, 2010); The following response was provided to the Agencies in regards to the Parcel C evaluation as a whole which addresses this comment: Navy acknowledges that while, from the Navy’s perspective, the remedy is protective of human health through active remediation, monitoring, and land use controls; additional information is needed to determine protectiveness for Bay receptors and has changed the remedy protectiveness determination to “Protectiveness Deferred” until such time the investigations are completed, and a protectiveness determination can be made. Specifically, the Navy will complete the Deep

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>F-WBZ investigation for RU-C4 and the B-Aquifer and Upper F-WBZ investigation for RU-C2.</p> <p>The Draft-Final Five-Year Review Section 4.5.3 Technical Assessment Question C has been updated to incorporate agency concerns related to the hydrogeological communication between aquifer units at Parcel C, discharges to the Bay, and the investigations currently underway for the Deep F-WBZ in RU-C4, and planned for the B-Aquifer and Upper F-WBZ in the RU-C2 area to address these data needs as follows:</p> <p>Yes. The following information has come to light that could question the protectiveness of the remedy:</p> <ul style="list-style-type: none"> There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization of the Deep F-WBZ in RU-C4 and the B-aquifer and Upper F-WBZ in RU-C2 are required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and F-WBZ and unacceptable discharges to the Bay are not and will not occur. <p>The Protectiveness Statement has been changed to:</p> <p>A protectiveness determination cannot be made because there is uncertainty related to the hydrogeologic communication between the A- and B-aquifers and whether discharge of chemicals present in the B-aquifer present potential unacceptable risks to Bay receptors. In order to make a protectiveness determination, the following action, at a minimum, needs to be made: complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria, as appropriate, to assess potential impacts to Bay receptors. For the Deep F-WBZ, a draft-final workplan has been provided to the FFA Regulatory Parties. For RU-C2, B-aquifer data collection and Upper F-WBZ, as appropriate, are expected to commence coincident with the performance monitoring period. The FFA parties will have discussions, as appropriate,</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>prior to scoping and developing primary documents, such as workplans. Depending on the results of the data analyses, the development of conceptual site models, and necessary steps, these actions could possibly be completed within the next 5 years, at which time, as appropriate, a protectiveness determination will be made.</p> <p>Response to Additional Comment:</p> <p>The following issue/recommendation has been added to the Five-Year Review Summary Table and Table 4-8 (Parcel C Issues, Recommendations, and Follow-up Actions):</p> <p>Issue: There have been detections of COCs from A-aquifer groundwater within the B-aquifer and F-WBZ groundwater and the connection and communication between hydrogeologic units within Parcel C is not fully understood. Therefore, further characterization is required to demonstrate that remedies within the A-aquifer will be effective and not re-contaminated by COCs within the B-aquifer and deep F-WBZ and unacceptable discharges to the Bay are not and will not occur.</p> <p>Recommendation: Complete investigations of the Bay Mud/Sandy Lean Clay aquitard, extent of chemicals in the B-aquifer and F-WBZ and use current ecological risk assessment methods and criteria to assess potential impacts to Bay receptors. Where warranted, additional actions or changes to the remedy will be recommended at the conclusion of these investigations.</p> <p>Milestone Date: 7/31/2029</p> <p>Interim Milestones: Completion of F-WBZ investigation fieldwork 11/30/2025, completion of the F-WBZ investigation report 11/30/2026¹</p> <p>Affects Protectiveness: Protectiveness Deferred</p> <p>Footnote:</p> <p>¹ The Parcel C B-aquifer study will also be conducted within the overall timeframe to meet the milestone date; however, because funding and contracts are not currently in place, the interim milestones are unavailable.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
6	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: Monitored natural attenuation (MNA) continues at RU-C2-2; however, PCE concentrations continue to exhibit an increasing trend above both its RG and active treatment criterion (ATC). Revise the sub-section with a commitment by the Navy to perform additional assessment and RA at RU-C2-2.	See response to General Comment #8.
7	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: In 2019, the FFA regulatory parties identified the need to further evaluate TCE impacts in the F-WBZ. A draft Work Plan was submitted to the FFA regulatory parties in 2022 and a draft final version is pending issuance by the Navy. Revise the RU-C4 sub-section and Table 4-8 to identify the next steps related to this planned investigation	See response to General Comment #8 and Specific Comment #5.
8	Specific	Section 4.4.1.1, Parcel C Remedy Implementation, Groundwater Monitoring: Revise the fifth bullet of the RU-C5 sub-section to include the conclusion made within the draft 2022 RAMR that “visual trends for source area monitoring well concentrations generally indicate that while some COCs initially decreased in concentration immediately after the 2021 RA, most have rebounded and some have increased above concentrations before the RA.” Revise the text to include that additional RAs will be necessary if this increasing trend is confirmed, following additional monitoring.	The requested language has been added at the end of the referenced bullet as follows: Visual trends for source area monitoring well concentrations generally indicate that while some COCs initially decreased in concentration immediately after the 2021 RA, most have rebounded and some have increased above concentrations before the RA. The need for additional RAs will be evaluated based on the decision criteria established in the RAMP.
9	Specific	Section 4.5.1.1, Question A, Parcel C: Revise this sub-section to (1) acknowledge that additional investigations and RAs under the 2010 ROD are needed for RU-C1, RU-C2, RU-C4, and RU-C5 and (2) provide a timeline for completion of these required activities. Update Table 4-8 to reflect revisions to text.	See response to General Comment #8 and Specific Comment #5.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
10	Specific	Section 5.4.4.1, Parcel G Remedy Implementation, Groundwater Monitoring: Revise this sub- section to describe the Parcel E IR-36 plume continuation onto Parcel G and the planned RA. Update applicable Parcel G figures to show plume continuation.	A review of Parcel E IR-36 data collected as part of the BGMP shows that the only exceedances within the last 7 years are for vinyl chloride in monitoring well IR36MW237A. The last time it exceeded was in 2020 and the exceedance was delineated by other IR36 A-aquifer monitoring wells so there is no reason to think it is going into Parcel G. The remedial action for IR-36, Building 406 is described throughout Section 6.4.1.1 Parcel E Remedy Implementation.
11	Specific	Section 5.6.1.3, Site Management Strategy: Revise this sub-section to provide further details regarding the meaning of the second bullet point (i.e., “The Navy is also planning to optimize...”). What are the Navy’s intentions? If possible, include a specific example.	Optimize, in this case, means to balance the cost of continued monitoring at the frequency and locations with the land use. It could mean decreasing or increasing depending on whether land use changes that could affect exposure. For example, reducing monitoring frequency when the parcel is awaiting transfer and is generally unused and increasing frequency upon transfer and land use changes from construction or other activities.
12	Specific	Section 6.4.1.1, Parcel E Remedy Implementation, Soil Excavation and Removal: Revise the first sentence of the second paragraph as follows – “...or upon the Navy’s determination to limit excavation [with approval provided in writing by the FFA regulatory parties].” Additionally, include example criteria which might result in the Navy proposing to limit planned excavations.	This clarification was added as requested. There are no example criteria at this time and excavation limitations will be handled on a case by case basis.
13	Specific	Section 6.4.2.1, Parcel E-2 Remedy Implementation, Belowground Barrier (Slurry Walls): Revise this sub-section to incorporate an acknowledgement, as previously noted by the FFA regulatory parties, that (1) the installed Upland Slurry Wall (USW) deviated from its original design and is not functioning properly. Discuss both the deviation and the current measures the Navy is taking to address this matter.	Additional information about the concerns raised by the FFA regulatory parties about the upland slurry wall has been added to the Technical Assessment Question A (6.5.1): <ul style="list-style-type: none"> • Concern: The Upland Slurry Wall was not installed as designed. Geologic refusal was met along a 200-foot section of the planned wall at approximately 0 feet msl (10 feet shallower than the designed depth). The slurry wall was designed to minimize flow of offsite groundwater into the landfill and was designed as a “hanging wall” (not embedded into bedrock) with a french drain (which was installed according to the design) to prevent precipitation recharge and divert flow to the freshwater wetland. The material encountered was

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<p>determined to be bedrock which has a lower permeability than the surrounding aquifer material. The draft final work plan to evaluate the Upland Slurry Wall performance is currently under way and work is anticipated to begin in 2025.</p> <p>Because the remedy is complex and requires multiple phases for installation over a longer timeframe, the Navy has identified the following additional Other Findings (new section 6.6.1.5) to document the Navy's commitment to continue to construct the remedy as well as evaluate available performance data for the remedy components that are in place:</p> <p>6.6.1.5 Parcel E-2 Other Findings</p> <p>The remedy at Parcel E-2 is complex and involves multiple phases of field work to install. A number of facilities that are important to understanding groundwater flow and contaminant concentrations have been completed or are substantially completed (for example, Nearshore Slurry Wall and landfill cover). The following is a summary of the remaining RA work, interim studies, and key milestones planned prior to completing the RACR:</p> <ul style="list-style-type: none"> Construct remaining components of the remedy including the permanent landfill gas system, freshwater and tidal wetlands, and groundwater monitoring network under the approved Final Work Plan (KEMRON, 2018): <ul style="list-style-type: none"> <u>Landfill Gas System (Phase IVa) anticipated in 11/30/2025</u> <u>Wetlands (Phase IVb) anticipated in 11/30/2027</u> Modify the landfill gas monitoring program to include a monitoring probe (GMP54) outside of the newly installed landfill cover as a new compliance point by revising the appropriate primary document(s). The primary document(s) needing revision and the proposed schedule for revision will be further discussed with the FFA Regulatory Parties not later than 9/30/2024. Document completion of the protective liner and final cover installation in the Phase III Remedial Action Construction Summary Report anticipated by 11/30/2024.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: May 14, 2024	Navy Response
			<ul style="list-style-type: none">• Conduct a study to evaluate the performance of the upland slurry wall as documented in the Post-Remedial Action Performance Evaluation Work Plan to evaluate the performance of the Upland Slurry Wall – Final 8/31/2024. Fieldwork is anticipated to be completed in 2024 and the Post-Construction Remedial Action Performance Report is anticipated by 12/31/2024.



City and County of San Francisco
DEPARTMENT OF PUBLIC HEALTH
ENVIRONMENTAL HEALTH

London N. Breed, Mayor
Grant Colfax, MD, Director of Health
Patrick Fosdahl, MS, REHS
Director, Environmental Health

July 18, 2024

Michael Pound
BRAC Environmental Coordinator, Hunters Point Shipyard
Base Realignment and Closure
Program Management Office West
33000 Nixie Way, Building 50, Suite 207
San Diego, CA 92147

Subject: SFDPH Comments on the Draft Final Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated July 2024

Dear Michael Pound:

The following comments are made with respect to the Navy's responses (received on July 2, 2024) to our May 14, 2024, comment letter (SFDPH Comments on the Draft Fifth Five-Year Review Report). As of the date of this letter, we have not received the Navy's responses to our April 12, 2024, comment letter (SFDPH Preliminary Comments on the Draft Climate Resilience Assessment, Appendix A of the Draft Fifth Five Year Review Report).

General Comments:

1. **Comment in Response to General Comment #3 – Maintenance & Repair of Durable Covers:**
Given that subsidence areas are not limited to Parcel C, revise the Remedy Operations and Maintenance sections for Parcels B and D-1 to include shoreline assessments as well. Include the statement added to Section 4.4.1.2 that, "[t]he Navy is currently conducting a shoreline assessment study to identify and recommend repairs and/or stabilization of structures and shoreline." Continued subsidence without preventative maintenance or repairs will have an unacceptable impact on the long-term effectiveness of the durable cover remedy. We recommend that the Navy also considers conducting a base-wide shoreline assessment given that subsidence areas may be occurring with a greater frequency in recent years.
2. **Comment in Response to General Comment #5 – General Climate Resilience Assessment Hazards:** We appreciate the Navy's inclusion of key climate change milestones within the Draft Final Fifth Five-Year Review (FYR) Report. Given the importance of sea level rise (SLR) and groundwater rise (GWR) for the future redevelopment of the Shipyard and the collaborative partnership between the City and the Navy, we look forward to participating in the Scoping and Prioritization Meeting on November 30, 2024. As the future recipients of the property, and given that SLR/GWR issues will continue post-transfer, it is critical for the City to understand and contribute to the design and scoping of the site-specific studies and eventual installation of mitigation measures. We look forward to actively contributing our expertise and insights during this process.
3. **Comment in Response to General Comment #6 – Sea Wall and Shoreline Revetment:** The geotechnical stability of the sea wall and shoreline revetments have the potential to be impacted

HUNTERS POINT SHIPYARD PROGRAM
49 South Van Ness Avenue, Suite 600, San Francisco, CA 94103
Phone 415-252-3967

Michael Pound

SFDPH Comments on the Draft Final Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated July 2024

under predicted SLR and GWR scenarios, calling into question the long-term protectiveness of the remedy. The Navy should include an assessment of this potential risk in the site-specific studies, including an updated geotechnical stability analysis, if warranted.

4. **Comment in Response to General Comment #9 – Building Demolition:** We understand that work plans for building demolition have not been developed yet and therefore those details are not included as part of this FYR Report. However, at minimum, the Navy should commit to (1) an assessment of potential soil-lead hazards in shallow soil adjacent to buildings with lead-based paint in areas proposed for future residential use in the 2018 Redevelopment Plan, and (2) installing durable covers in former building footprints to ensure remedy completeness.
5. **Comment in Response to General Comment #14 – Technical Assessment “Question B”:** Per the Navy’s response, we understand that remedial goal/chemical data was not compared to the current risk-based screening levels because the evaluation of protectiveness was performed by evaluating the protectiveness of the remedy. However, the EPA’s FYR Guidance¹ recommends evaluating changes in standards and risk prior to evaluating whether the remedy remains protective. Changes in risk-based concentration levels, particularly those based on toxicity criteria, which might result in orders of magnitude changes to the remedial goals (e.g., trichloroethene, vinyl chloride), are important considerations for the long-term protectiveness of the remedy and future redevelopment activities. These changes need to be evaluated in a timely manner and presented transparently. Delaying the re-evaluation of the protectiveness of the remedy due to changes in risk-based levels may result in unexpected additional cleanup activities, which could extend property transfer timeframes and eventual redevelopment. We urge the Navy to follow the EPA’s FYR Guidance and perform the re-evaluation prior to the next FYR Report.

Additionally, the Navy’s conclusions relevant to potential construction worker exposure (e.g., utility workers) appear to conflict with remedial action objectives that prioritize cleanup rather than risk management. We ask that the Navy provide an additional evaluation prior to the next FYR Report of this updated exposure scenario so that the City can review and comment on the proposed risk management approach.

6. **Comment in Response to General Comment #16 – Redevelopment Plan Reference:** Revise the note on Figure 1-3 to as follows: “[The] Land Use Districts shown on this figure were applicable at the time [when] risk evaluations and [the] development of institutional controls for future use were completed [and may not be reflective of the current 2018 Redevelopment Plan].” for clarification. In addition to updating the citations in the FYR Report, revise the following sections to reflect the land uses described within the 2018 Redevelopment Plan:
 - a. Revise Section 3.2.2.2 as follows: “Based on the City and County of San Francisco’s reuse plan as currently amended (SFRA, 1997; OCII, 2018), Parcel B [land uses will include residential, institutional, retail sales and services, civic, arts and entertainment, parks and recreation, and office uses. The land use at IR-07/18 will be limited to parks and open space.]”
 - b. Revise Section 4.2.2.2 as follows: “According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel C [land uses will include office and industrial, multi-media and digital arts, hotel, retail sales and services, residential (select areas; see redevelopment plan), civic, arts and

¹ USEPA, 2001. Comprehensive Five-Year Review Guidance, OSWER 9355.7-03B-P. June.

Michael Pound

SFDPH Comments on the Draft Final Fifth Five Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated July 2024

entertainment, parks and recreation, and institutional uses.] The area along the eastern portion of Parcel C bounded by the bay will be set aside [for parks and] open space.”

- c. Revise Section 5.2.2.2 as follows: “According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel D-1 [land use will predominantly include parks and open space; however, land use in the northern portion of the parcel will be identical to Parcels D-2, G, and UC-1. Land use at Parcels D-2, G, and UC-1 will include office and industrial, hotel, infrastructure/utility, multi-media and digital arts, institutional, civic, arts and entertainment, residential, parks and recreation uses (if not subject to applicable environmental restrictions).]”
- d. Revise Section 6.2.2.2 as follows: “[According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel E land use will include office and industrial, hotel, infrastructure/utility, multi-media and digital arts, institutional, civic, arts and entertainment, residential, and parks and recreation uses (if not subject to applicable environmental restrictions). The land use at Parcel E-2 will be limited to parks and open space.]”

Specific Comments:

1. **Comment in Response to Specific Comment #11 – Section 5.6.1.3, Site Management Strategy:**
We appreciate the Navy’s clarification in their response. Please revise the second bullet in Section 5.6.1.3 to include this explanation (i.e., “Optimize...means to balance the cost of continued monitoring at the frequency and locations within the land use. It could mean decreasing or increasing depending on whether land use changes that could affect exposure...”).

Additional Comments:

1. **Issues Recommendations and Follow-up Actions Tables:** The Issues, Recommendations and Follow-up Actions tables in Sections 3.0 through 6.0 are a useful tool for tracking and understanding important ongoing issues within each Parcel that require assessment within the FYR framework. We recommend that the Navy include the following issues in the tables: PFAS remedial investigation activities, site-specific climate resilience assessments, shoreline assessment for subsidence areas, changes to areas requiring institutional controls (ARICs) for VOCs, and tabulated chemical of concern (COC) concentrations for future use by health and safety professionals (as stated in the Site Management Strategy sections).

Sincerely,



Ryan Casey, P.E.

Administrative Engineer

CC: Danielle Janda, Navy
Erica Schmandt, Navy
Jamie Egan, Jacobs
Andrew Bain, USEPA

Michael Howley, DTSC
Mary Snow, RWQCB
Susan Philip, DPH
Thor Kaslofsky, OCII

Lila Hussain, OCII
Christina Rain, Langan
Randy Brandt, Geosyntec

This page intentionally left blank.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930		Responses By Navy	
Comment By City & County of San Francisco	Code/Organization DPH			Date July 2024	
Project Title and Location SFDPH Comments on the Draft Final Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, Dated July 2024				Type of Review	
				<input checked="" type="checkbox"/>	Draft
				<input type="checkbox"/>	Final
				<input type="checkbox"/>	Other

No.	Location	City & County of San Francisco Comments Dated: July 18, 2024	Navy Response
1	General	<p>Comment in Response to General Comment #3 – Maintenance & Repair of Durable Covers</p> <p>Given that subsidence areas are not limited to Parcel C, revise the Remedy Operations and Maintenance sections for Parcels B and D-1 to include shoreline assessments as well. Include the statement added to Section 4.4.1.2 that, “[t]he Navy is currently conducting a shoreline assessment study to identify and recommend repairs and/or stabilization of structures and shoreline.” Continued subsidence without preventative maintenance or repairs will have an unacceptable impact on the long-term effectiveness of the durable cover remedy. We recommend that the Navy also considers conducting a base-wide shoreline assessment given that subsidence areas may be occurring with a greater frequency in recent years.</p>	This language was added to Sections 3.4.2.2 (Parcel B-1), 3.4.2.3 (Parcel B-2), and 5.4.1.2 (Parcel D-1).

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: July 18, 2024	Navy Response
2		<p>Comment in Response to General Comment #5 – General Climate Resilience Assessment Hazards:</p> <p>We appreciate the Navy’s inclusion of key climate change milestones within the Draft Final Fifth Five-Year Review (FYR) Report. Given the importance of sea level rise (SLR) and groundwater rise (GWR) for the future redevelopment of the Shipyard and the collaborative partnership between the City and the Navy, we look forward to participating in the Scoping and Prioritization Meeting on November 30, 2024. As the future recipients of the property, and given that SLR/GWR issues will continue post-transfer, it is critical for the City to understand and contribute to the design and scoping of the site-specific studies and eventual installation of mitigation measures. We look forward to actively contributing our expertise and insights during this process.</p>	Comment Acknowledged
3	General	<p>Comment in Response to General Comment #6 – Sea Wall and Shoreline Revetment</p> <p>The geotechnical stability of the sea wall and shoreline revetments have the potential to be impacted under predicted SLR and GWR scenarios, calling into question the long-term protectiveness of the remedy. The Navy should include an assessment of this potential risk in the site-specific studies, including an updated geotechnical stability analysis, if warranted.</p>	Comment Acknowledged
4	General	<p>Comment in Response to General Comment #9 – Building Demolition</p> <p>We understand that work plans for building demolition have not been developed yet and therefore those details are not included as part of this FYR Report. However, at minimum, the Navy should commit to (1) an assessment of potential soil-lead hazards in shallow soil adjacent to buildings with lead-based paint in areas proposed for future residential use in the 2018 Redevelopment Plan, and (2) installing durable covers in former building footprints to ensure remedy completeness.</p>	Comment acknowledged

No.	Location	City & County of San Francisco Comments Dated: July 18, 2024	Navy Response
5	General	<p>Comment in Response to General Comment #14 – Technical Assessment “Question B”</p> <p>Per the Navy’s response, we understand that remedial goal/chemical data was not compared to the current risk-based screening levels because the evaluation of protectiveness was performed by evaluating the protectiveness of the remedy. However, the EPA’s FYR Guidance¹ recommends evaluating changes in standards and risk prior to evaluating whether the remedy remains protective. Changes in risk-based concentration levels, particularly those based on toxicity criteria, which might result in orders of magnitude changes to the remedial goals (e.g., trichloroethene, vinyl chloride), are important considerations for the long-term protectiveness of the remedy and future redevelopment activities. These changes need to be evaluated in a timely manner and presented transparently. Delaying the re-evaluation of the protectiveness of the remedy due to changes in risk-based levels may result in unexpected additional cleanup activities, which could extend property transfer timeframes and eventual redevelopment. We urge the Navy to follow the EPA’s FYR Guidance and perform the re-evaluation prior to the next FYR Report.</p> <p>Additionally, the Navy’s conclusions relevant to potential construction worker exposure (e.g., utility workers) appear to conflict with remedial action objectives that prioritize cleanup rather than risk management. We ask that the Navy provide an additional evaluation prior to the next FYR Report of this updated exposure scenario so that the City can review and comment on the proposed risk management approach.</p> <p>¹ USEPA, 2001. Comprehensive Five-Year Review Guidance, OSWER 9355.7-03B-P. June.</p>	<p>Comment acknowledged.</p> <p>The Navy would like to clarify that the RGs/concentrations were compared to the current risk-based screening levels for groundwater because the remedies are ongoing and the goal is to meet the RGs. They were not evaluated for soil because changes in the toxicity for soil COCs does not affect remedy protectiveness because the remedy is to prevent exposure to soil with COCs above the RG through durable covers, which are implemented parcel-wide and ICs require maintenance of these covers to continue to prevent exposure to COCs in soil.</p> <p>Regarding the construction worker scenario. The Five-Year Review acknowledges the potential changes in toxicity but again, these changes are accounted for by the ICs as discussed in the following text in Technical Assessment Question B:</p> <p><i>However, those changes will not affect the RGs for the construction worker scenario identified in the ROD because ICs require identification and management of potential risks to construction workers through the preparation and approval of plans and specifications for all construction activities that may pose unacceptable exposure to construction workers.</i></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: July 18, 2024	Navy Response
6	General	<p>Comment in Response to General Comment #16 – Redevelopment Plan Reference</p> <p>Revise the note on Figure 1-3 to as follows: “[The] Land Use Districts shown on this figure were applicable at the time [when] risk evaluations and [the] development of institutional controls for future use were completed [and may not be reflective of the current 2018 Redevelopment Plan].” For clarification. In addition to updating the citations in the FYR Report, revise the following sections to reflect the land uses described within the 2018 Redevelopment Plan:</p> <p>Revise Section 3.2.2.2 as follows: “Based on the City and County of San Francisco’s reuse plan as currently amended (SFRA, 1997; OCII, 2018), Parcel B [land uses will include residential, institutional, retail sales and services, civic, arts and entertainment, parks and recreation, and office uses. The land use at IR-07/18 will be limited to parks and open space.]”</p> <p>Revise Section 4.2.2.2 as follows: “According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel C [land uses will include office and industrial, multi-media and digital arts, hotel, retail sales and services, residential (select areas; see redevelopment plan), civic, arts and entertainment, parks and recreation, and institutional uses.] The area along the eastern portion of Parcel C bounded by the bay will be set aside [for parks and] open space.”</p> <p>Revise Section 5.2.2.2 as follows: “According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel D-1 [land use will predominantly include parks and open space; however, land use in the northern portion of the parcel will be identical to Parcels D-2, G, and UC-1. Land use at Parcels D-2, G, and UC-1 will include office and industrial, hotel, infrastructure/utility, multi-media and digital arts, institutional, civic, arts and entertainment, residential, parks and recreation uses (if not subject to applicable environmental restrictions).]”</p> <p>Revise Section 6.2.2.2 as follows: “[According to the Redevelopment Plan (SFRA, 1997; OCII, 2018), Parcel E land use will include office and industrial, hotel, infrastructure/utility, multimedia and digital arts, institutional, civic, arts and entertainment, residential, and parks and recreation uses (if not</p>	<p>The changes have been made as requested.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX J

No.	Location	City & County of San Francisco Comments Dated: July 18, 2024	Navy Response
		subject to applicable environmental restrictions). The land use at Parcel E-2 will be limited to parks and open space.]”	
1	Specific	<p>Comment in Response to Specific Comment #11 – Section 5.6.1.3, Site Management Strategy</p> <p>We appreciate the Navy’s clarification in their response. Please revise the second bullet in Section 5.6.1.3 to include this explanation (i.e., “Optimize...means to balance the cost of continued monitoring at the frequency and locations within the land use. It could mean decreasing or increasing depending on whether land use changes that could affect exposure...”).</p>	Revision was made as requested.
1	Additional	<p>Issues Recommendations and Follow-up Actions Tables: The Issues, Recommendations and Follow-up Actions tables in Sections 3.0 through 6.0 are a useful tool for tracking and understanding important ongoing issues within each Parcel that require assessment within the FYR framework. We recommend that the Navy include the following issues in the tables: PFAS remedial investigation activities, site-specific climate resilience assessments, shoreline assessment for subsidence areas, changes to areas requiring institutional controls (ARICs) for VOCs, and tabulated chemical of concern (COC) concentrations for future use by health and safety professionals (as stated in the Site Management Strategy sections).</p>	Comment acknowledged. The Issues, Recommendations, and Follow-up Actions tables for each section are specific to issues affecting protectiveness. The Navy has added these “Other Findings” (findings in the Five-Year Review that are relevant to the Navy, Agencies, and/or Stakeholders but that do not affect protectiveness) to the Five-Year Review summary form in the Executive Summary.

This page intentionally left blank.

Appendix K

Responses to Public Comments on Draft Five-Year Review Report and Climate Resilience Assessment

(Per Navy guidance, all personal identifiable information received from private citizens was removed from Appendix K to help protect the privacy of the private citizens who submitted comments on the Draft Fifth Five-Year Review. Types of information removed included names, e-mail address, mailing addresses, phone numbers, etc.)

This page intentionally left blank.

Review On Fifth Five-Year Review Hunters Point Naval Shipyard Report By ALL THINGS BAYVIEW

1. Parcel Division and Cleanup Oversight Concern: Although dividing the site into parcels enables focused cleanup operations, this strategy may inadvertently lead to gaps in managing cross-parcel contamination risks and achieving a comprehensive ecosystem restoration. The potential for contaminants to migrate between parcels due to factors like water flow, air transport, and human activities poses a challenge to the isolated parcel approach. Moreover, the current strategy may not fully account for the interconnectedness of the ecosystem, potentially overlooking opportunities for holistic environmental recovery.

To enhance the effectiveness of the remediation efforts at HPNS, there is a pressing need for a more cohesive strategy that bridges the gaps between individual parcel cleanup efforts. A concerted effort to understand and mitigate cross-parcel contamination risks is imperative. This would involve detailed mapping of contamination flow paths, robust monitoring systems to track the movement of pollutants across parcel boundaries, and collaborative remediation plans that address the site's environmental challenges in a unified manner. Furthermore, adopting an ecosystem-based approach to restoration could offer a more comprehensive solution, one that not only focuses on removing contaminants but also on restoring the natural habitat and biodiversity of the area. Such an approach would acknowledge the interdependence of soil, water, and biological resources across the site, aiming for a restoration outcome that revitalizes the entire HPNS ecosystem. This shift towards integrated management and ecosystem-based restoration strategies would not only address the immediate concerns of contamination and environmental degradation but also pave the way for a sustainable future for HPNS, turning it into a model for large-scale environmental remediation projects.

2. Strengthening Radiological Safety and Expanding Climate Resilience

The proactive stance towards radiological safety and climate resilience within the Hunters Point Naval Shipyard (HPNS) remediation efforts marks a significant advancement in addressing long-term environmental and health risks. Setting explicit timelines for the retesting of radiological conditions signifies a commitment to thoroughness and transparency, ensuring public trust in the remediation process. Similarly, incorporating climate change projections into the planning stages reflects an acknowledgment of the evolving nature of environmental risks and the need for adaptive remediation strategies.

The identification of Radiological Objects (ROs) raises questions about the initial assessment of radiological hazards and suggests that these risks may have been underestimated. This discovery highlights the complexity of radiological contamination and the challenges in predicting its full extent. Concurrently, while the initiatives for climate resilience are commendable, they currently offer a narrow focus on specific climate change effects, potentially overlooking broader ecological and environmental impacts that could influence the site's remediation effectiveness in the long term.

Addressing these concerns necessitates a multifaceted approach. For radiological safety, it is imperative to refine assessment protocols to encompass a broader spectrum of potential hazards, including those that may not have been fully considered in previous evaluations. This involves not only a thorough re-examination of known contaminated areas but also a proactive search for previously unidentified radiological hazards, using advanced detection technologies and methodologies. Enhancing the radiological assessment framework will ensure a more accurate understanding of the site's conditions, enabling the formulation of comprehensive remediation strategies.

Regarding climate resilience, expanding the scope of planning to cover a wider array of climate impact scenarios is essential. This expansion should include considerations of how different climate change outcomes, such as increased precipitation, temperature fluctuations, and extreme weather events, could interact with the site's specific environmental and contamination dynamics. Integrating these broader climate projections into the remediation planning process will allow for the development of more robust and flexible strategies, capable of adapting to a range of future conditions. Strengthening the site's resilience to climate change not only protects the progress of the remediation efforts but also ensures the long-term safety and health of the surrounding community and ecosystem.

3. Enhancing Community Engagement and Clarity in Protectiveness Statements

The efforts towards robust community engagement and the provision of detailed protectiveness statements for each parcel at Hunters Point Naval Shipyard (HPNS) significantly contribute to the transparency and integrity of the remediation process. These actions are fundamental in building and maintaining trust with the Bayview community, providing residents with a clear understanding of the safety and environmental health of their surroundings. The detailed protectiveness

statements serve as a crucial communication tool, offering insights into the current state and effectiveness of the remediation measures in place.

While the report outlines commendable steps towards community engagement and clarity in the remediation's effectiveness, there remains a gap in facilitating deeper, more meaningful community participation in the remediation oversight and decision-making processes. The current engagement strategies may not fully capture the breadth of community concerns or allow for their substantive influence on remedial planning and execution. This gap highlights a missed opportunity for leveraging community insights and fostering a collaborative remediation effort.

Addressing this concern necessitates the establishment of a community advisory board that is integrally involved in the remediation process. This board should comprise diverse community representatives, including residents, local business owners, environmental activists, and public health experts, ensuring a broad spectrum of perspectives and concerns are represented. By playing an active role in reviewing and providing feedback on remediation plans, progress reports, and protectiveness statements, the community advisory board would ensure that the voices of those most affected by the site's environmental issues are not just heard but are influential in shaping remediation efforts. Such a board would act as a bridge between the Navy, remediation teams, and the community, enhancing the transparency, accountability, and responsiveness of the cleanup process. It would also serve to validate the remediation's progress and effectiveness from a community perspective, thereby strengthening public trust and cooperation in achieving a safe and healthy environment for Bayview residents.

4. Advancing Sustainability in Redevelopment Efforts

The transition of various parcels at Hunters Point Naval Shipyard (HPNS) towards the completion of their remediation phases brings into focus the opportunity for sustainable redevelopment. This pivotal phase represents not just an endpoint for cleanup efforts but the beginning of a transformative journey towards a rejuvenated and sustainable landscape. The emphasis on embedding sustainability principles within the redevelopment plans is commendable, indicating a holistic vision that extends beyond remediation to include the future vitality and resilience of the community and environment.

While the strategic intent to incorporate sustainability into the redevelopment of HPNS is clear, there is a noticeable gap in the explicit detailing of these sustainability principles within the planning documents. Specifically, there's a need for greater clarity on the integration of green infrastructure, the utilization of renewable energy sources, and the creation of community-accessible green spaces. The current level of detail may not sufficiently convey the depth of commitment to environmental sustainability or provide a clear roadmap for achieving these objectives.

To bridge this gap, it is imperative that the redevelopment plans not only espouse the principles of sustainability but also lay out a concrete strategy complete with specific targets, benchmarks, and timelines. This strategy should detail the incorporation of green infrastructure elements, such as permeable pavements, rain gardens, and green roofs, that contribute to stormwater management and biodiversity. Similarly, the plans should explicitly address the integration of renewable energy solutions, aiming to significantly reduce the carbon footprint of new developments. Furthermore, the commitment to creating community-accessible green spaces should be elaborated, specifying the extent, features, and accessibility of these spaces to ensure they meet the recreational and social needs of the community while enhancing local ecology.

By articulating these sustainability targets and benchmarks with greater specificity, HPNS redevelopment plans will not only align with global best practices in urban renewal and environmental stewardship but also resonate more deeply with community aspirations for a sustainable and thriving future. This approach underscores a commitment to not just remediate past environmental damages but to reimagine and reconstruct the shipyard area as a model of sustainable urban living, thereby setting a benchmark for similar projects worldwide.

5. To augment the ongoing efforts, it is crucial to integrate these enhancements:

- Developing more robust mechanisms for community involvement to ensure their voices significantly influence remediation planning and decision-making processes.

- Clear articulation of sustainability principles in the redevelopment of parcels, with specific targets and benchmarks that align with environmental sustainability and community well-being goals.

All Things Bayview

Continued Public Comments on the Navy's FYR 4/5/2024

1. Given the concentration of existing toxic contamination sites, it is pertinent to project hazards based on more than conservation projections. Closed sites where clean up may or may not occur in the future contains residual contaminants and will be vulnerable to rising groundwater.
2. Only one parcel is identified as being impacted by permanent groundwater emergence in the near- term (2035). We urge the Navy to consider the work of Dr. Raymond Tompkins that examines past and present-day vulnerabilities and the risk assessment of unpredictable, toxic plume migration.
3. Transient climate change phenomena have a high probability of occurring and causing damage within these parcels. More should be done in terms of preventative climate resilience in addition to regular maintenance, specifically the installation of climate resilient infrastructure.



Steve Castleman
Supervising Attorney
Environmental Law Clinic
(510) 644-4761 (direct)
scastleman@clinical.law.berkeley.edu

COMMENTS to the HPNS DRAFT FIFTH FIVE YEAR REVIEW REPORT

Submitted via email to: [HPNS FYR Comments@us.navy.mil](mailto:HPNS_FYR_Comments@us.navy.mil)

Berkeley Law's Environmental Law Clinic submits these comments to the Navy's *Draft Fifth Five Year Review Report*, Hunters Point Naval Shipyard ("HPNS" or "Shipyard") San Francisco, California, November 2023 ("*Draft Review*"), on behalf of Greenaction for Health and Environmental Justice ("Greenaction") and its members and constituents in Bayview Hunters Point, San Francisco, and other communities around San Francisco Bay.

I. INTRODUCTION

Greenaction is a multiracial grassroots organization founded and led by local leaders from low-income and working class urban, rural, and indigenous communities. Its mission is to fight environmental racism and injustice and build a clean, healthy, and just future for all. Greenaction has been involved in health and environmental justice advocacy in Bayview Hunters Point ("BVHP"), a community disproportionately impacted by pollution, since Greenaction was founded in 1997. BVHP residents have borne the brunt of the impacts of the toxic and radioactive waste at the Shipyard. As such, they have a direct, personal, and long-standing interest in assuring a cleanup of the Superfund site that protects human health and the environment in the short and long term.

The *Draft Review*'s Climate Resilience Assessment ("CRA") is inadequate. It fails to use the most current data and projects forward only to 2065, an arbitrary date supported by no rationally defensible reasons when the planned Shipyard development will be occupied well beyond that date.

The *Draft Review*'s radiological sections are flawed and fundamentally dishonest.

The Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. 9601, *et. seq.*, the National Contingency Plan ("NCP"), 40 C.F.R. 300.400, *et. seq.*, and the Federal Facilities Agreement ("FFA"),¹ govern this cleanup. They require that responsible parties act in good faith; there is an inherent obligation to tell the truth. For example, cleanup decisions must be supported by facts, by data in the record. Those facts must be true, not fraudulent, or misleading.

Instead of acting in good faith, the Navy has consistently misled the public throughout the cleanup, a practice it unfortunately continues in its *Draft Review*.

¹ *Federal Facilities Agreement for Naval Station Treasure Island – Hunters Point Annex* ("FFA").

A glaring example of the Navy's bad faith is that, despite five years' notice and without factual or legal justification, it simply ignored the statutory deadline for its *Fourth Five Year Review* ("*Fourth FYR*"), publishing it approximately nine (9) months late. The Navy further violated the law by publishing three *Fourth FYR Addenda*, the last of which issued approximately twenty (20) months after the deadline. Now, the Navy has the audacity to grant itself an ongoing extension, to institutionalize its *Fourth FYR* deadline violations by repeating them in its *Draft Review*. Rather than reverting to the lawful deadline, November 8, 2023, which the Navy has already blown past, the Navy says it will publish its *Final Fifth FYR* in July 2024.

The Navy's treatment of Congressionally mandated deadlines illustrates the contempt it has shown for the law throughout this cleanup.

The Navy's primary five-year review obligation is to assure the remedy remains protective. The Navy generally claims radiological remedies "will be protective,"¹ when radiological retesting is done. However, the Navy has no factual basis for those claims.

Undisclosed in the *Draft Review* is that the Navy's radiological contractor, Tetra Tech EC, Inc., (TtEC) committed fraud, all its data had to be discarded, and the Navy only intends to retest one-third of the soil remediation Tetra Tech did. Even if that one-third retesting found no contamination – which it **has** in all three Parcels undergoing retesting to date – the Navy would have no data on which to base a protectiveness determination in the other two-thirds.

Greenaction, among others, has always insisted that 100% retesting of Tetra Tech's work is necessary to rectify the fraud. The *Draft Review* is not honest enough to even mention the distinction between one-third retesting and 100% retesting or its significance to protectiveness.

CERCLA requires 100% retesting. Without it, a data-driven long-term protectiveness determination is impossible.

As described further below, the Navy's own agreement also requires 100% retesting. But the Navy has spent the last three years attempting to **invalidate its own data!** Characteristically, the *Draft Review* fails to even acknowledge the agreement, that retesting in 2021 found radiological contamination triggering 100% retesting, or that the Navy has reneged on its agreement in violation of the retesting work plans.

If the Navy insists it will do only one-third soil retesting, it must articulate what data it is relying on in making any representations about protectiveness of the two-thirds of soil it did not or will not test.

¹ See Table 1.1.

II. RADIOLOGICAL COMMENTS

A. All Shipyard Sites Should Be Identified As “Radiologically Impacted” Until Demonstrated Otherwise

Much of the radioactive contamination at HPNS comes from sandblasting ships involved in atomic weapons testing, leaving dangerous residual radioactive contamination at the site, and from the Naval Radiological Defense Laboratory (NRDL), which operated from 1948 to 1960. Radioactive contamination was spread through the Shipyard by air, water, and other activities (i.e., physical tracking from truck tires, shoes, and animals) at a time when little thought was given to containing radiation and there were few safety precautions.

Radioactive contamination did not neatly conform to the artificial boundaries of the Shipyard or, within it, to the boundaries of Parcels the Navy assigned in later decades to facilitate the cleanup.

Furthermore, the Navy has repeatedly declared – definitively – that Shipyard sites were **not** radioactively contaminated when that turned out not to be true. For example, the Parcel B Record of Decision identified no radiological impacts in Parcel B, requiring no radiological remediation.

But the Navy was dangerously wrong; Parcel B **was** radiologically impacted. The ROD had to be amended to address radiological contamination and remediation.

More recently, the *Draft Review* admits that:

ROs [radiological objects] were identified during excavation and remediation of soil in areas **that were not considered radiologically impacted**. There is a high degree of confidence that discrete ROs were removed to a depth of 2 feet below ground surface (bgs). However, there is a potential for ROs to be present in material below 2 feet bgs where shoreline expansion has occurred since 1946. (Emphasis added, p. 5-37.)

The unexpected nature of this discovery highlights that the Navy has not properly characterized whether all Shipyard locations are radiologically “impacted.” It must revisit the issue in light of the facts and identify all parcels and sites as “radiologically impacted,” until and unless it can demonstrate with defensible scientific data that any particular site is not impacted.

The Navy must test for radioactive contamination in all areas of the Shipyard and because radiation may have been spread beyond the Shipyard, beyond its boundaries, as well.

B. The Navy Continues to Mislead the Public

The Navy’s contempt for the law and its agreements extends to the Navy’s public participation obligations. By continuing to mislead, the Navy deprives the public of the ability to comment meaningfully on the Navy’s *Draft Review*.

The Navy misleads primarily through omission. A reader of the *Draft Review* and the two *FYRs* that preceded it would never learn about TtEC's fraud, for example. The Navy did not mention it in the *Third* or *Fourth FYRs*.

Accordingly, in its 2018 comments to the *Draft Fourth FYR*, Greenaction stated: "The Navy must not be allowed to mislead the public and regulators by dismissing the fraud's impact on the clean-up."² Unfortunately, the *Draft Review* **continues** to ignore the impact of the fraud on the clean-up, presenting an incomplete and misleading narrative.

The Navy has misled the public by omitting the entire history of the radiological remediation, including that:

- TtEC committed fraud and violated quality assurance and quality control requirements;
- The Navy allowed TtEC to investigate and clear itself;
- The Navy defended TtEC for six years after the fraud was discovered, claiming its **invalid** data was **valid**;
- The Navy did its own evaluation of TtEC data and found much more evidence of fraud than TtEC did;
- Regulators did an independent data review and found that data from one parcel was 97% suspect, and another was 90% suspect;
- The Navy agreed, after six years of defending TtEC's data, to discard it as unreliable;
- The Navy and EPA decided, despite vociferous public objections, to a retesting plan that required only one-third soil retesting, with the proviso that if any contamination was found, that finding would trigger 100% soil retesting;
- Contamination **was** found in all three parcels retested, including 23 strontium 90 ("Sr-90") samples from 9 different Parcel G locations that exceeded the remedial goals; and
- The Navy has spent three years attempting to **invalidate** its own **valid data** to renege on its retesting agreement.

The *Draft Review* omits more than a decade of the cleanup's history. Rather than acknowledge the fraud and its impact, the Navy merely says, "evaluations determined previous data were unreliable,"³ and cites "uncertainty with a portion of the radiological survey and remediation work."⁴

² Greenaction, *Comments to the Draft 5 Year Review Hunters Point Naval Shipyard* (2018), p. 12.

³ See, for example, pp. xviii, 3-45, 4-45, 5-37, 6-57.

⁴ See, for example, pp. xviii, 3-45, 4-19, 4-45, 5-16, 5-37, 6-12, 6-57.

To describe what regulators found – Parcels with 97% and 90% defective data – as “uncertainty” in a “portion” of the work is grossly misleading.

Considering that EPA and others, including Greenaction, have repeatedly pointed out these omissions through multiple *FYRs*, these omissions are clearly intentional.

In sum, the Navy omits any facts that do not support its desired conclusion: that no further remediation will be required no matter what retesting finds.

C. Radiological Retesting

The Navy proposed and EPA approved three related work plans to retest the TtEC’s work: the June 2018, *Final Parcel G Removal Site Evaluation Work Plan*; the April 2022, *Final Parcel B Removal Site Evaluation Work Plan*; and the August 2022, *Final Parcel C Removal Site Evaluation Work Plan* (collectively, the “Retesting Work Plans”).

The *Retesting Work Plans* each memorialized the retesting agreement:

For Phase 1, 100 percent of soil will be re-excavated and characterized at 33 percent of trench units (TUs) associated with former sanitary sewers and storm drains in Parcel G. Soil sampling and scanning at the remaining 67 percent of TUs will be performed as part of Phase 2 to increase confidence that current site conditions comply with the Parcel G ROD RAO. **The Navy will re-excavate 100 percent of Phase 2 TUs if contamination is identified in Phase 1 TUs.** (Emphasis added.)⁵

1. Strontium-90 Exceedances Were Identified in Parcel G Retesting

Using approved EPA methods, retesting in 2021 in Parcel G found at least 23 samples, from 9 different trench units, exceeding the strontium 90 (“Sr-90”) remediation goal, 0.331 picocuries per gram (“pCi/g”).

Instead of accepting its own sampling results and living up to its 100% retesting agreement, the Navy made false claims about the Sr-90 results. These claims include that the results were (1) false positives; (2) within “background” radiation levels; (3) invalid data; and (4) not considered a risk to human health or the environment.

All these falsehoods served a single purpose: to invalidate the Sr-90 exceedances and avoid triggering 100% retesting.

However, EPA objected to the Navy’s attempt to invalidate the Sr-90 results. In September 2021 emails obtained through the Freedom of Information Act (“FOIA”), EPA stated: “[t]he previous strontium-90 results are valid data. It's inaccurate to suggest the data were not

⁵ *Final Parcel G Removal Site Evaluation Work Plan*, Former Hunters Point Naval Shipyard, June 2019, p. 3-5. *Final Parcel B Removal Site Evaluation Work Plan*, Former Hunters Point Naval Shipyard, April 2022, p 3-5; *Final Parcel C Removal Site Evaluation Work Plan*, Former Hunters Point Naval Shipyard, August 2022, p. 3-6.

precise enough. EPA has been clear that in the absence of convincing evidence, we cannot support using the new data to supersede existing results.”⁶ (Emphasis added.)

The *Draft Review* ignores the Sr-90 findings.

2. Radioactive Objects Were Found in Parcels B & C Retesting

The Navy also found radiological contamination in Parcels B and C. At a public meeting on September 25, 2023, the Navy disclosed scanning of Parcel C soil, previously “remediated” by TtEC, found an easily identifiable, radioactive “deck marker.” At a public meeting on December 4, 2023, the Navy disclosed it found a radioactive object in Parcel B soil, a glass object contaminated with Radium-226.

These findings are also ignored in the *Draft Review*. Like the Sr-90 exceedances the Navy would rather not mention, these omissions indicate the Navy’s determination to keep inconvenient facts out of the record.

3. The Navy Reneges on the Retesting Work Plan

Three years after the SR-90 was found exceeding remedial goals, the Navy still refuses to accept the exceedances as valid data. It has announced it is conducting an Sr-90 “verification study,” which it plans to release in June 2024.⁷

There is no mention of this study in the *Draft Review*. If the Navy releases the verification study in June 2024, that will be a month **after** the comment period for the *Draft Review* closes on May 7, 2024. This precludes public comments about the Sr-90 study and deprives the public from exercising their public participation rights.

4. The Navy Violates Its Duty to Assure Protectiveness

CERCLA requires *FYRs* to “assure that human health and the environment are being protected by the remedial action being implemented” – in the present tense. (Emphasis added.)

The Navy has consistently, and improperly, deferred this requirement.

The *Draft Review* claims, “This report is intended to identify issues that may **prevent a particular remedy from functioning as designed, which could affect the protection of human health and the environment** should exposure occur.” (Emphasis added, p. xv.)

But it fails to do so.

First, assurance is binary. Either the remedy meets CERCLA’s long-term protectiveness standards, or it does not. The *Draft Review* makes neither of these assertions. Instead, its

⁶ EPA email message to the Navy, RE: HPNS Timely Topic, Sep. 23, 2021.

⁷ Navy Presentation to HPNS Citizens Advisory Committee, Strontium 90 Verification Timeline, March 25, 2024, slide 10, https://hpscac.net/wp-content/uploads/2024/03/HPNS-Update_HPSCAC_25Mar2024-1.pdf.

Protectiveness Statements misleadingly claim that remedial actions at Parcels B, C, D, and G are “short-term protective.” These claims are based on access controls, such as fences, signage, and caps, to restrict access to contaminated sites.

By focusing on “short-term protectiveness,” the Navy **again** improperly defers its protectiveness determination as it did in its *Fourth FYR*, which promised it would be addressed in the *Fifth FYR*.⁸ Now that time has come, but rather than stating the obvious truth – that the remedy is **not** protective of human health and the environment – the Navy defers it once again, defeating the entire purpose of five year reviews.

Second, as mentioned above, the *Draft Review* ignores the single most important factor that “may prevent a particular remedy from functioning as designed, which could affect the protection of human health and the environment should exposure occur,” the TtEC fraud.

Instead of addressing long-term protectiveness, the Navy makes short-term claims, as summarized in the *Draft Review*:

Based on this Fifth Five-Year Review, the remedy at IR-07/18 is Protective, the remedies at Parcels B-1, B-2, C, UC-2, D-1, D-2, UC-1, G, and UC-3 are Short-Term Protective because there are no current uncontrolled exposures, and the remedies at Parcels E and E-2 Will be Protective upon completion of remedy construction. (p. xv.)

This passage contains no statement that the remedies are protective in the long term or, except for Parcels E and E-2, will be. Similarly, in its Protectiveness Statements, the Navy only discusses short term protectiveness, deferring the long term “until retesting is complete:”

Radiological retesting is ongoing to **confirm** that levels in soils and structures are protective of human health. **Until retesting is complete**, short-term protectiveness is met through Navy controls such as access to the parcel through fencing, locked gates, and ICs (restricting intrusive work and maintaining durable covers). (Parenthesis in original, emphasis added, p. xix.)⁹

However, what the Navy is “confirming” is unclear. In 2018, the Navy discarded all TtEC’s data, at least nominally. The Navy has no valid radiological testing data to “confirm.” No long-term remedy can be protective unless 100% retesting of TtEC’s work is done and any remediation it identifies as needed is completed.

Neither CERCLA nor EPA guidance allow using short-term protectiveness to substitute for long term protectiveness. CERCLA requires both. Temporary measures are insufficient to satisfy long-term protectiveness. Fencing off and/or covering over contamination is not a permanent “remedial action being implemented,” they are not CERCLA removal or remedial actions. The *Draft Review* does not assure the remedy is protective for future families who may live on the Parcels for decades to come.

⁸ See *Draft Review*, pp. 1-8, 1-9.

⁹ See, for example, pp. xix, xx, xxi, xxii, 3-22, 3-23, 4-20, 4-21, 5-17, 5-18, 6-24.

Furthermore, as discussed further below, the Navy has failed to demonstrate that its remedial goals for buildings and soil meet the current CERCLA risk range, and the Navy has no intention of doing so until after the retesting is complete.

Accordingly, there is no valid data on which to base any assertion that the remedy is protective of human health and the environment in the long-term. For some Parcels, it may have soil data, but only in one-third of the soil tested. The Navy has not released this data. Nor has it released retesting data from buildings.

The Navy will never be able to assure long-term protectiveness with incomplete data. It must retest and if necessary, re-remediate 100% of TtEC's work to satisfy CERCLA.

In fact, the retesting data the Navy has, no matter how incomplete, indicates that the remedy does **not** meet the Shipyard's remedial goals; 23 samples from Parcel G exceed the remedial goals for Strontium 90.

Therefore, the *Draft Review* must state the remedy is **not** protective of human health and the environment and then detail the steps necessary to achieve protectiveness and the timeline within which it will be accomplished.

D. The *Draft Review* Violates the FFA and EPA Guidance

On January 22, 1992, the Navy, the EPA, and the Department of Toxic Substances for the State of California entered into the Federal Facilities Agreement for Naval Station Treasure Island – Hunters Point Annex (“FFA”).

Section 1, “Purposes of the Agreement,” states that the purpose of the FFA is to:

Establish a procedural framework and schedule for developing, implementing and monitoring appropriate response actions at the Site **in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the National Contingency Plan (NCP), Superfund guidance and policy, the Resource Conservation and Recovery Act (RCRA), RCRA guidance and policy, and applicable State law....** (Emphasis added).

In other words, the parties agreed EPA CERCLA guidances would be mandatory.

EPA has published numerous guidances, including its *Comprehensive Five-Year Review Guidance*, which “provide[s] an approach for conducting five-year reviews, facilitate consistency across the ten EPA regions, clarify current policy, and discuss the roles and responsibilities of various entities in conducting or supporting five-year reviews.”

The Navy has failed to act in accord with this guidance by failing to: 1) determine whether there have been changes in toxicity or other contaminant characteristics that need to be investigated; 2) identify “recent toxicity data and their sources”; 3) investigate whether the exposure assumptions, toxicity data, and cleanup levels are still valid; 4) recalculate risk

assessment to account for changes in standards and/or toxicity data; and 5) investigate the question, “Has any other information come to light that could call into question the protectiveness of the remedy?”

Although the *Draft Review* acknowledges that “there have been some changes to toxicity values and risk assessment methods,” the Navy summarily dismisses them, concluding they “do not affect remedy protectiveness.” However, the Navy failed to adequately explain **why** the changes do not affect protectiveness, failing to justify this conclusion; it cites no facts, data, or calculations, as required by EPA’s guidance.

E. The Navy Failed to Update Risk Calculations (PRGs) Yet Again

In the *Draft Review*, the Navy claims it updated the risk calculations:

Following the recommendation from the Fourth Five Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs [remedial goals] for soil and building structures, which **concluded that the current RGs are protective** for all future land users (Navy, 2020a, 2020b). (Parenthesis in original, emphasis added, p. 1-9.)

However, like much of the *Draft Review*, the Navy’s history of the *Fourth FYR Addenda* is misleading.

EPA insisted the Navy update the PRGs in comments to the *Draft Fourth FYR*. For reasons that have never been made public, after the *Draft Fourth FYR* was “finalized,” the Navy issued the three *addenda* cited above, purporting to validate the RGs.

1. Soil Remedial Goals

The soil remedial goals were adopted in 2006. The two soil *addenda* purported to demonstrate that the Navy did both RESRAD¹⁰ and PRG calculations. According to the Navy, they verified the remedial goals’ protectiveness.

But The Navy’s calculations fell outside of the acceptable CERCLA risk range (1×10^{-4} to 1×10^{-6}). For example, according to the *Addendum*, the remedial goal for Cobalt-60, 0.0361 pCi/g, translates to an excess lifetime cancer risk of 1.7 in a million, nearing twice the limit for CERCLA risk’s “starting point” of 1 in a million. The Navy failed to include any facts justifying exceeding a 1×10^{-6} risk, as required by EPA guidance.

On or about November 15, 2019, EPA sent the Navy its *EPA Review of the Draft Addendum to the Fourth Five Year Review Evaluating Radiological Remediation Goals for Soil*, a comment letter unambiguously stating the 2019 Soil Addendum failed to meet its obligation to assure protectiveness: “[A]t this time, EPA cannot verify that the soil radiological

¹⁰ RESRAD is a computer model developed by Argonne National Laboratory and sponsored by the Department of Energy to evaluate doses from residual radioactivity in nuclear power plants. It is not an approved EPA CERCLA method or guidance.

remediation goals are protective of human health for long-term protectiveness.” (Emphasis in original.)

The Navy posted a statement on its website less than two weeks later, on November 26, 2019, stating, “EPA recently concurred on the protectiveness determinations in the Navy’s Five-Year Review.”

Like many other examples, this statement was misleading.

By letter of August 18, 2020, the Navy approved implementing the June 2019 *Parcel G Removal Site Evaluation Work Plan*, as supplemented by the July 2020 *Parcel G Removal Site Evaluation Work Plan Addendum*. The letter also responded to the 2020 *Soil Addendum*, which, according to the EPA’s letter, was prepared “to evaluate the long-term protectiveness of the soil radiological remediation goals.” But rather than assuring the remedies **are** protective, the *Addendum* claimed radiological remedial goals are **expected to be**:

Using RESRAD and the PRG Calculator to estimate the maximum radiation dose and risk to residents from exposures to Hunters Point soils has verified that **the soil radiation remediation goals are expected to be protective** for all future land users. (Emphasis added.)

In other words, the Navy **predicts** the remedial goals will be verified sometime in the future, once again “kicking the can” of the PRG/RESRAD dispute – which has been going on for at least **six years** – “down the road” yet again.

EPA’s August 18, 2020, letter clearly states the PRG/RESRAD dispute has **not** been settled. Speaking of the 2020 *Soil Addendum*, EPA wrote:

The FYR Addendum does not complete the long-term protectiveness evaluation of the soil radiological remediation goals. Instead, the FYR Addendum describes Navy plans to further evaluate cancer risk **after the radiological retesting data are available.** (Emphasis added.)

Again, the Navy improperly deferred its protectiveness determination until some future evaluation. It does not even venture a guess as to when that might be.

The *Fourth FYR Addenda* also deferred all consideration of cumulative risk. The 2020 *Soil Addendum* states:

The Navy will continue to evaluate risk during remedial investigations to verify that **combined risks** due to site-related contamination (i.e., radiation, volatile organic compounds, metals, etc.) achieve appropriate protectiveness standards. (Emphasis added.)

EPA’s August 18, 2020, letter addressed deferring the cumulative risk and found it necessary to remind the Navy of EPA’s so-far frustrated expectations:

In this planned **future evaluation**, the Navy **will evaluate the retesting data** to ensure that the additive risk from multiple radiological and chemical contaminants, if present, is within the EPA cancer risk management range. We expect the Navy to examine site-related health risks and risks inclusive of background. Consistent with EPA guidance, we expect the Navy to provide a clear justification for any cancer risks above 1×10^{-4} .

Left unsaid by EPA was that the *2020 Soil Addendum* did not demonstrate the soil remedial goal remained within the CERCLA risk range.

The remedial goals have not been updated since 2006, while EPA's default Preliminary Remediation Goals have been updated, most recently in 2023.

Following is a chart comparing the EPA 2023 default soil PRGs and the remedial goals the Navy adopted in 2006 and continues to use. The EPA default PRGs are orders of magnitude more protective than the Navy's remedial goals.

SOIL RELEASE CRITERIA COMPARISON – Residential – 1997 to 2023

<u>Radionuclide</u>	<u>HPNS (2006)</u>	<u>EPA 2/20/23</u>
Americium-241	1.36	.4800
Cesium-137	0.113	.0401
Cobalt-60	0.0361	.0285
Europium-152	0.13	.0384
Europium-154	0.23	.0467
Plutonium-239	2.59	.4450
Radium-226	1.0	.00192
Strontium-90	0.331	.00477
Thorium-232	1.69	.00170
Tritium	2.28	no value listed
Uranium 235+D	0.195	no value listed

The Navy needs to explain to the general public, using non-technical, commonly understood language, how the 2006 remedial goals could still be protective considering that the 2023 defaults are orders of magnitude lower than the remedial goals. The Navy must update the PRGS, “showing the arithmetic” to the public to justify the PRGs that result from proper application of the PRG calculators.

2. Building Remedial Goals

EPA's comments to the *Draft Review* clearly state the Navy's submission of the *Fourth FYR Building Addendum* did not satisfy its demands the Navy update the building PRGs:

EPA did not approve this addendum nor the follow-on building re-testing workplans due to our collective inability to reconcile technical differences between the Navy's use

of the RESRAD Build model and EPA's Building Preliminary Remediation Goal calculator. (Emphasis added.)

EPA then explains the Navy changed the remedy:

More importantly, based on a substantive change in building reuse plans and recent congressional authorization, the Navy is now preparing to demolish and dispose of all potentially radiologically impacted buildings, except two historical structures, rather than certify them for unrestricted reuse.

The RESRAD/PRG dispute having apparently been mooted out, EPA urged the Navy to "ensure building materials are characterized sufficiently to help determine how to safely protect human health and the environment during demolition and how to dispose of the debris in a regulatory-compliant way."

However, as EPA notes, not all buildings are being demolished. Two historical structures will not be demolished. There are also approximately three other historical buildings in other Parcels that will not be demolished. Accordingly, unless the Navy can demonstrate that none of the historical buildings were radiologically impacted, the PRG/RESRAD dispute remains. The Navy must update its building remedial goals as part of this *Fifth FYR*.

3. Other Deficiencies

The risk calculations in the *Fourth FYR Addenda* are misleading because of the Navy's misuse of "institutional controls" ("ICs"). For example, the Navy's risk calculations exclude all risk to future residents from consuming homegrown food. The Navy justifies this by ICs which prohibit growing plants except in raised boxes, to be enforced through deed notices.

However, the ICs are insufficient to assure long-term protectiveness. First, EPA's guidance, *PRG User's Guide*, allows for exposure pathways like those from homegrown food to be switched off only if "a route of exposure . . . is considered to be unreasonable at their site, both currently and in the future."

It is unreasonable to assume future residents will forever garden only in raised beds if that limitation is enforced merely by deed notices. And even if all residents were made aware of the institutional controls and tried to comply, it is unreasonable to assume that raised beds will continue to be protective in perpetuity.

Second, the Navy has never provided a realistic plan to realistically enforce the ICs continuously in the future. All discussion of implementation of IC's has been deferred until the Land Use Controls Remedial (LUC) design reports become effective, upon property transfer. (*Draft Review*. p. 1-6.)

Furthermore, the Navy's protectiveness calculations failed to calculate total risk from the sum of all radionuclides. It also failed to sum the radiological risks with chemical risks.

There is no factual justification for deferring assessing cumulative risk until after the retesting is completed, particularly if the Navy does only one-third retesting of soil.

Finally, the Navy has not properly justified its background radiation calculations, as it improperly took background samples at Shipyard sites that were likely radiologically impacted.

F. The Navy Violated the Law by Not Responding to Comments to the *Draft Fourth FYR*

Greenaction submitted substantial, detailed comments to the *Draft Fourth FYR* during the public comment period relating to radiological issues and the impact of global warming on the remedy. They are attached hereto and incorporated herein by reference as Exhibit 1.

CERCLA and the NCP require that the Navy respond to such comments, pursuant to 42 U.S.C. § 9617(b), and 40 C.F.R. 300.430(f)(3)(i), respectively. The FFA also requires it.

The Navy did not respond to Greenaction's comments to the *Draft Fourth FYR*, in violation of CERCLA, the NCP and the FFA.

The Navy must not repeat its *Fourth FYR* violations and respond to all comments to the *Draft Review*.

The Navy must explain in response to our comments why it has omitted virtually all the key facts about the history of radiological remediation, fraud, and retesting.

It must also respond with rational reasons why it has spent the last three years attempting to invalidate its own data, if there are any, other than that the Navy seeks to repudiate its retesting agreements and will do whatever it takes to get out from under them.

G. The Navy Is Still Relying on TtEC's Discredited Data

Considering EPA found 97% of TtEC's data to be unreliable in one Parcel and 90% unreliable in another,¹¹ there are no rational reasons for the Navy to continue to cite or rely on TtEC data.

However as with the *Fourth FYR*, the Navy improperly continues to rely on TtEC data. The Index of the *Fourth FYR* listed 117 TtEC documents, 91 of which are entitled either "Final" or "Final Final" status surveys. In the *Draft Review*, the Navy continues to rely on TtEC data. The Index lists 26 Tetra Tech, EC Inc. documents, most of them relating to radiological remediation.

The Navy should either excise all references to TEC data or specify what data it is citing from TtEC and justify its use by demonstrating it is not tainted by fraud and/or quality assurance and quality assurance deficiencies.

¹¹ December 27, 2017, letter from John Chestnutt (EPA) to George ("Pat") Brooks (Navy) accompanying EPA Final Comments on Draft Navy Radiological Data Evaluation Parcels B & G Report (December 27, 2017), p. 1.

III. COMMENTS ON the CLIMATE RESILIENCE ASSESSMENT

Greenaction and its community partners are extremely disappointed that the Navy continues to proceed with capping radioactive and toxic waste at this shoreline site. The Navy's continued reliance on capping and seawalls is unacceptable and a recipe for disaster. It is also in defiance of and contradictory to the Superfund law's mandate that a remedy must remain protective. The current remediation methods for multiple parcels includes capping radioactive and toxic waste along the shoreline, which will NOT remain protective when inundated and flooded by groundwater and sea level rise. **We cannot accept an inadequate cleanup that includes capping of waste where it will be flooded and spread into communities and the environment.**

Comment one – The Five Year Review must use the government's scientific projections when planning for risks before and beyond 2065.

Sea-level and Bay-level Rise

Sea level rise and groundwater rise does not have an endpoint in sight. In fact, the Navy's planning only until 2065 makes it the only such agency to pretend it is not currently necessary to plan beyond 2065. All the relevant regional, state, and federal agencies involved with this issue are using higher sea level rise projections, and a longer time period as well, for planning.

The HPNS Superfund site is located directly on the shoreline of San Francisco Bay. Sea level rise and groundwater rise will cause negative and potentially devastating impacts to the health of adjacent communities and San Francisco Bay.

The Navy's Climate Resilience Assessment ("CRA") section of the *Draft Review* improperly uses sea-level rise ("SLR") projections of 1.0 feet by 2035 and 3.2 feet by 2065. These projections are too low to adequately assess the risk of sea level rise or the resilience of the proposed and current remediation.

The latest report from the Ocean Protection Council ("OPC") recommends sea level rise planning should use projections of 0.8ft- 1.2ft by 2050 and 3.1ft- 6.6ft by 2100.

To protect the environment and communities living on the shoreline, all development, adaptation plans, and related activity on the shoreline must plan and prepare for the worst-case scenario and highest projections. This is not just an issue of potential flooding infrastructure but also potential inundation and spreading of toxic and radioactive waste, including atomic bomb residue.

The CRA does not follow all the requirements of DTSC's *Sea Level Rise Vulnerability Assessment* ("SLRVA"). As their *Sea Level Rise Guidance* states: "The initial SLRVA should be based on the California SLR Work Plan recommendation to assess pathways to resiliency to 3.5 feet of SLR by 2050 and 6.0 feet by 2100."¹²

¹² State of California Sea Level Rise Guidance: 2024 Science and Policy Update <https://opc.ca.gov/wp-content/uploads/2024/01/SLR-Guidance-DRAFT-Jan-2024-508.pdf>.

Instead, the CRA only includes projections until 2065. It is not adequate, and indeed, is extremely reckless and unscientific, to dismiss projections beyond 2065 and ignore the risks associated with higher projections until the next Five Year Review. The remediation methods for cleaning this site must remain protective indefinitely and prioritize the health and safety of the community and the environment. The CRA must be redone to include projections until at least 2100. And there must be additional opportunities for public participation once the revision of the CRA to include projections into 2100 takes place.

Groundwater Rise

Dr. Kristina Hill, an esteemed University of California Berkeley Professor and expert who studies groundwater rise, found that rising groundwater can infiltrate underground pipes, alter foundations, require underground waterproofing, remobilize old soil contaminants, emerge as surface water, and cause flooding.¹³ She also concluded that:

With 1 meter of sea level rise, we can expect to see about 18,000 acres of flooded land (saltwater). [Their] map analysis shows that about 26,000 additional acres are at risk of flooding from freshwater groundwater, rising up through the soil. Even if we build walls and levees to protect from saltwater, groundwater flooding could still affect as much as 37,000 acres of what today is dry land.¹⁴

Dr. Hill's report is referring to the entire San Francisco Bay shoreline, but it highlights just how massive an impact groundwater rise can have. The CRA states the "historical high groundwater table from December 2012 was used as the baseline [to identify areas that may experience a groundwater table rise to a depth of 3 feet below ground surface.]" (p. A-15,16). Using data from more than a decade ago is unacceptable when this assessment is supposed to identify risks far into the future.

Comment two – Capping contamination or using “durable” covers cannot be an acceptable form of remediation at the HPNS because of the risk associated with sea level rise, groundwater rise and inundation, and increased flooding from storms.

Rising sea levels, rising groundwater, human, animal, and seismic activity all increase the risk of caps deteriorating and losing effectiveness. It is highly likely that contamination will come in contact with groundwater and threaten the health of community members, as well as the health of Bay ecosystems and its environment. With sea level rise, groundwater rise, and associated flooding, durable covers, capping, and containment of waste cannot be an acceptable form of remediation. This is especially true when there is radioactive contamination remaining at the site.

¹³ *Rising coastal groundwater as a result of sea-level rise will influence contaminated coastal sites and underground infrastructure*, by Dr. Kristina Hill, et al: https://d197for5662m48.cloudfront.net/documents/publicationstatus/139385/preprint_pdf/5480722e3998464796727ca6838328de.pdf. p. 7.

¹⁴ *Id.*, p. 22.

There must not be any risk of exposure to toxic and radioactive contamination from an improper cleanup based on defective science. The *Draft Review* relies on monitoring to detect if the caps are working properly. However, once a monitor detects leaks, damage has already been done and contamination has begun to spread. Conducting maintenance on these leaks will also grow increasingly difficult as the site becomes temporarily or permanently flooded or covered by development. The facts are clear: capped waste will eventually be flooded, and at some point in the future, likely under water. That would be a major environmental disaster.

It would be impossible and near useless to try to monitor “durable” covers and capped contamination if and when the site becomes flooded, perhaps permanently. Using capping as a form of remediation for this cleanup, or any cleanup project along the shoreline, is a temporary fix that cannot protect surrounding communities and environments from exposure when the site is flooded. Capping waste requires monitoring and maintenance indefinitely.

Removing and/or treating the waste on-site will allow for less monitoring and maintenance.

Capping contamination rather than completely removing it leaves the Bayview Hunters Point community in close proximity to toxic and radioactive waste. Generations from Bayview Hunters Point have experienced environmental harm, a variety of pollution, poor air quality and toxic exposure as a result of living next to the Shipyard Superfund site. This community deserves a clean, safe, and healthy environment **now**.

The Hunters Point Naval Shipyard [Census Tract: 6075980600] ranks in the 83rd percentile for the overall CalEnviroScreen 4.0 Percentile score, which is based on pollution burden and population characteristics. Some census tracts surrounding the Shipyard rank even higher, since there is a higher population density, as reflected in the following table:

Census Tract	CalEnviroScreen 4.0 Percentile
6075023103	88
6075023200	92
6075023400	84
6075061000	76

EPA’s guidance, *Citizen’s Guide to Capping*, states that, “A cap will continue to isolate contamination **as long as it does not erode or develop cracks or holes that allow water to reach the contaminated material.**”¹⁵ (Emphasis added.) This simple guideline should be enough to prove that capping along the shoreline, where we can expect over 6 ft of sea level rise,

¹⁵ EPA *Citizen Guide to Capping*: https://19january2017snapshot.epa.gov/sites/production/files/2015-04/documents/a_citizens_guide_to_capping.pdf.

will not be protective. Caps will eventually erode or develop cracks that can result in migration of contamination into the environment.

Comment three – Flooding has already occurred at the HPNS and has already threatened the health and safety of the surrounding community and environment.

During the heavy rains in early 2023, Greenaction staff observed large areas of flooding in the Shipyard, including pools of water that lasted weeks and perhaps months in some areas. The Navy cannot defer considering the threat of flood-caused mobilization of contamination to a future time; the problem is already here. Contamination can be mobilized and spread by storm flooding and spread into community spaces, environments, and ecosystems. Some flooding also occurred in early 2024 during the heavy rains and atmospheric rivers.

Comment four – As this is a shoreline contaminated site in a heavily impacted community subject to sea level rise and groundwater rise, the entire site must be completely cleaned up to residential standards, with no contamination remaining on-site.

The HPNS Superfund Site is at extreme risk of permanent flooding from sea level rise and groundwater rise. The cleanup should be as close to a 100% cleanup as possible, no matter what the future land use may be. Leaving toxic and radioactive waste at the site has the potential to harm the entire Bay, including all other San Francisco Bay shoreline communities. There is no excuse for leaving hazardous waste on the shoreline when there is a high chance of flooding and inundation in the future. The site also must be completely cleaned because the surrounding Bayview Hunters Point community has long been harmed by exposure to dangerous chemicals, radiation, and pollution. They deserve a clean environment.

Comment five – Pursue and research safe, alternative treatment technologies that do not leave toxic and radioactive waste along the shoreline.

Greenaction urges the Navy and government regulatory agencies to pursue the use of safe, alternative treatment technologies to the extent possible during site mitigation as an alternative to dumping or burning toxic waste at disposal sites in other vulnerable communities.

The Navy stated in its latest bus tours that it plans to transport and dispose of waste from the Shipyard at the Kettleman Hills disposal facility. It is unacceptable, negligent, and unjust to dispose of the hazardous waste in dumps operating on expired permits, like Kettleman Hills.

Hazardous waste must also not be shipped out of state to locations where there are fewer restrictions on how hazardous waste is stored and managed. The Navy and EPA are responsible for treating the site and disposing of waste in a way that does not move the environmental burden and pollution from one community to another.

IV. CONCLUSION

Widespread fraud and quality assurance/quality control deficiencies, a botched cleanup and lack of proper regulatory oversight have compromised the cleanup of the HPNS contamination. This *Draft Review* is the time and process to re-evaluate the remedies because:

- They are not protective of public health or the environment,
- The remedial goals are outdated,
- The Navy only intends to retest one-third of the soil remediation done by Tetra Tech, and
- The remedies do not reflect latest scientific consensus on expected sea level rise due to climate change.

These comments highlight serious flaws and omissions in the *Draft Review* that must be corrected, including inadequate consideration of the impact of the radiological fraud on the cleanup.

The *Draft Review's* remedy analysis also fails to adequately address rising sea levels due to climate change which threaten San Francisco Bay and its waterfront. The threat that rising Bay levels could inundate portions of the shipyard, including Parcel E-2, is real and foreseeable, as is the inadequate revetment and retaining wall design that will not provide adequate protection from contaminants reaching the Bay. As Greenaction stressed in its comments to the *Fourth FYR*, these climate change threats must be addressed, not ignored.

The Navy must plan for – not underplay – predictable risks such as those posed by global warming, especially at Parcel E-2, where buried contamination is extensive and will continue to be toxic far into the future. If the Navy gets it wrong because of its refusal to factor up-to-date science into the five-year review, it could unleash a catastrophe to public health and the environment. As more and more data on sea-level and Bay-level rise emerges, the Navy must reconsider and conclude that the buried hazardous and radioactive waste at Parcel E 2 needs to be removed from proximity to residents and the rising Bay.

The *Draft Review* needs to be revised to incorporate up-to-date science and public health

///

///

///

///

///

data. Common sense and environmental justice require that remedies be reappraised. Revised remedies must prioritize removal of all hazardous and radioactive contamination from the Shipyard.

Respectfully Submitted,

May 7, 2024



Steven J Castleman

Supervising Attorney
Environmental Law Clinic
Attorney for Greenaction for Health and Environmental Justice

This page intentionally left blank.

EXHIBIT 1

Greenaction's Comments to the *Draft Fourth Five Year Review*

This page intentionally left blank.

GOLDEN GATE UNIVERSITY

School of Law

Environmental Law and Justice Clinic

TO: Derek Robinson, HPNS BRAC Environmental Coordinator
Department of the Navy
BRAC Program Management Office West
derek.j.robinson1@navy.mil

FROM: Greenaction for Health and Environmental Justice
Environmental Law and Justice Clinic, Golden Gate University
School of Law

RE: Comments to the *Draft 5 Year Review Hunters Point Naval Shipyard, San Francisco, California, June 2018*

DATE: September 7, 2018

I. INTRODUCTION

The Environmental Law and Justice Clinic of the Golden Gate University School of Law submits these comments to NAVFAC's *Draft Parcel G Removal Site Evaluation Work Plan, Former Hunters Point Naval Shipyard, San Francisco, California, June 2018* ("Draft Review"), on behalf of Greenaction for Health and Environmental Justice ("Greenaction") and its members and constituents in Bayview Hunters Point, San Francisco and in other communities located along San Francisco Bay.

Greenaction is a multiracial grassroots organization founded and led by grassroots leaders from low-income and working class urban, rural, and indigenous communities. Our mission to fight environmental racism and injustice and build a clean, healthy and just future for all. Greenaction has been involved in health and environmental justice advocacy in Bayview Hunters Point since it was founded in 1997. This low-income community of color continues to be negatively and disproportionately impacted by pollution, gentrification, health disparities, and other forms of environmental, social and economic injustice.

Mailing Address:
536 Mission Street
San Francisco, CA
94105-2968

Offices:
40 Jessie Street
Suite 530
San Francisco, CA
tel: (415) 442-6647
fax: (415) 896-2450
www.ggu.edu/law/eljc

Bayview Hunters Point residents have borne the brunt of the impacts of the toxic and radioactive waste at the Hunters Point Naval Shipyard ("HPNS"). As such, they have a direct, personal and long-standing interest in assuring the maximal cleanup of the Superfund site.

A. The Community Doubts the Navy's Commitment To Rebuilding Trust

"The fraud and uncertainty surrounding Tetra Tech's work at HPNS has caused a complete loss of trust in the Navy by the local community."¹ This is not a member of Greenaction speaking. This is the Navy's Laura Duchnak, BRAC PMO's Director. She's right.

Unfortunately, though the Navy acknowledges it has lost all credibility, it remains adamant that it will do nothing to address or correct it. It continues to downplay the fraud and its effects on the cleanup. It promises one thing but delivers another. It has not taken the evidence of previous contamination in Parcel A at all seriously.

If the Navy truly wants to start to repair relations with the community, it must take actions that demonstrate in concrete terms how it will change its approach. This is not just another cleanup; it's a cleanup tainted by massive fraud.

As Ms. Duchnak's letter said, the fraud "had far-reaching consequences for the United States, its employees, the City of San Francisco, the local residents, and the taxpayers." The Navy should act like it. The loss of trust extends to the hazardous waste cleanup as well.

The revisions of the *Draft Parcel G Work Plan* and this *Draft Review* are likely to be the first two tests of the Navy's willingness to change course. Will it live up to the promises it made to the community to resample all Tetra Tech's work? Will it incorporate

¹ *Victim Impact Statement in the Matter of US v. Hubbard*, March 15, 2018, attached as Appendix IV.

the community's concerns into its final work plan and five-year review? Or will it betray the community's trust yet again?

B. The Draft Review Does Not Comply with Navy Policy

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA § 121(c)) sets forth the requirement for a five-year review:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.

Similarly, Title 40 Code of Federal Regulations §300.430(f)(4)(ii)] states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

To implement five-year reviews at properties owned by the Navy, it promulgated a policy, *Department of Navy Policy for CERCLA Five-Year Reviews*.

This Fourth Five-Year Review states its objective: "The purpose of the fourth five-year review is to provide an update on the status of remedial actions (RAs) and post-RA activities implemented since the third five-year review, evaluate whether these RAs and post-RA activities are protective of human health and the environment,

and assess the progress toward meeting the recommendations made in the third five-year review.”²

Unfortunately the *Draft Review* neither complies with the *Department of Navy Policy for CERCLA Five-Year Reviews* nor the intention stated above. For example, paragraph 9a of the policy states, “The Five Year Report should; 1) clearly state whether the remedy is or is expected to be protective, 2) document any deficiencies identified during the review, and 3) recommend specific actions to ensure that a remedy will be or will continue to be protective.” (Emphasis added, p. 4).

As further detailed below, the *Draft Review* fails in its most basic function – identifying whether the remedies are protective. Rather, it equivocates. *The Draft Review* must clearly state that the radiological remedies are NOT currently protective. And if the Navy states that the remedies “will be” protective, it should detail what “specific actions” will be taken, parcel by parcel, to assure that will be the case, as required by Navy policy.

Furthermore, the policy’s paragraph 9b states, “Where necessary, five year review reports should contain descriptions of follow up actions needed to achieve, or to continue to ensure protectiveness. Along with these recommendations, the report should list a timetable for performing the actions...”

The *Draft Review* fails to contain descriptions of the specific actions the Navy will take to achieve protectiveness. All it says is that the Navy intends to kick that can down the road until 2023. There is no explanation why what the Navy knows now is excluded; it must be included.

The Navy must revise the *Draft Review* to comply with CERCLA’s plain language and to comply with its own policies.

² *Draft 5 Year Review Hunters Point Naval Shipyard, San Francisco, California*, June 2018, p. 1-1.

II. RADIOLOGICAL – General Comments

A. Facts – The Navy Must Tell the Whole Truth

The *Draft Review* is similar to the *Draft Parcel G Work Plan* before it in the way it: mischaracterizes the facts; minimizes the effects of Tetra Tech's radiological fraud and its impact on the remediation; and abandons its public promises.

Emblematic of the Navy's recasting of facts are these remarkable assertions:

The Navy has completed an extensive review of the radiological remediation documents and data as part of its evaluation of the potential contractor manipulation and/or falsification of data and has identified the areas where resurveying for radionuclides is required to address all issues discovered during the Navy's evaluation. Any available information on the status of the review and discoveries made by the Navy were considered during the development of this five-year review. (p. 5-3.)

The Navy pretends it proactively has done everything it can to investigate and redress the fraud, when nothing could be further from the truth. The Navy makes it plain in this review that it still does not believe comprehensive sampling is necessary. Crucially, the Navy actions were limited to a document review – Tetra Tech's discredited documents, no less.³ Only when one parses the paragraph can one see the Navy's true intentions.

Start with the phrase, "potential contractor manipulation and/or falsification of data." Despite numerous sworn whistleblower affidavits attesting to widespread fraud, despite the Navy's own data review revealing evidence of fraud in approximately 40% of samples in Parcels B and G, despite the EPA finding that the Navy's data review missed about half the data problems,⁴ and despite two criminal convictions of Tetra Tech supervisors – the very supervisors identified as culpable in the whistleblowers' testimony – the Navy still insists the fraud was "potential."

³ The Navy has provided only two of the 117 Tetra Tech documents listed in the *Draft Review's* "References." See Section IIC below.

⁴ The contractor(s) that missed half the data problems have demonstrated their undependability. The Navy should commit to obtaining different contractors that the Navy, the community and the regulators can have confidence in.

The Navy claims it “has identified the areas where resurveying for radionuclides is required to address all issues discovered during the Navy’s evaluation.” That is simply false, unless by “all areas” the Navy means all of Parcels A, B, C, D, E, G, UC-1, UC-2 and UC-3. If the Navy truly has identified answers to all issues arising from the Tetra Tech Fraud, why are they not included in the Draft Review? The Navy should identify “the areas where resurveying for radionuclides is required” on maps of each parcel. (Also see section III (I) below regarding Figure 3-13.)

So far the Navy has proposed resurveying only in one Parcel, Parcel G. The *Draft Work Plan* for that project was so roundly criticized by comments made to it by EPA that it was unresponsive to its concerns that it threatens to invoke the dispute-resolution clauses of the Federal Facilities Agreement (FFA) if the Navy continues to ignore them: “Without the requested changes, the approach will not provide the necessary confidence level to establish when Parcel G would be suitable for redevelopment, and EPA may invoke the dispute resolution process described in the FFA.”

Then the Navy claims “any available information” was considered, but only “any available information” from the data review, that is, any available Tetra Tech data. Pointedly, the Navy cannot claim that it considered “any available information” without that tremendously narrowing qualification.

Among the “available information” the Navy ignores are: all of the whistleblowers’ sworn statements filed in support of Greenaction’s state and federal petitions to revoke Tetra Tech’s licenses;⁵ eyewitness and documentary evidence, including sampling documents and test results demonstrating there were elevated levels of radionuclides in Parcel A’s sanitary and storm water sewer systems that should have been investigated but never were;⁶ lists of approximately 50 additional witnesses who the Navy should interview;⁷ and BRAC’s own victim impact statement in the criminal cases

⁵ The federal petition and its supporting documents are incorporated herein and are available at: https://www.dropbox.com/sh/1gfn7ja0fc3c516/AAD7-9qzmbhhUTkGvpN4p_Xua?dl=0. The state petition and its supporting documents are incorporated herein and are available at: https://www.dropbox.com/sh/zh2pknpvgvuucjp0/AAA-1xjCHxjViQ_s8wvTpm9Za?dl=0.

⁶ See Appendix VI, Rad Survey Results.

⁷ See Appendix VII, emails from ELJC to the Navy.

against Tetra Tech's former supervisor Justin Hubbard. In a March 15, 2018 letter, Laura Duchnak, the Director of BRAC PMO, wrote of the impact of Tetra Tech's fraud:

The redevelopment of HPNS was supposed to revitalize the community and provide jobs and affordable housing; all of that is now on hold indefinitely as the Navy and the regulatory agencies have determined that TtEC's work is unreliable.

The total cost for the database evaluation, work plan preparation, and preliminary field work *is* approximately \$8.8M.... The EPA has indicated that it would require all work to be re-performed as originally contracted. However, these discussions are not final. The Navy's best estimates for required re-work costs currently range from \$100M to \$300M.

In sum, the Navy has expended \$272.8 M to date paying TtEC for their work at HPNS, identifying the fraud, and taking measures to prevent further fraud. Depending on the cost of required re-work, this number will certainly rise to \$372.8 M and is likely to rise as high as \$572.8 M. This amount of money would buy a new Littoral Combat ship. It is nearly half of the Navy's total expenditures for *all* environmental clean-up activities at HPNS through fiscal year 2017 (\$991.1 M).

Mr. Hubbard's actions had far-reaching consequences for the United States, its employees, the City of San Francisco, the local residents, and the taxpayers.⁸

Ms. Duchnak does not discuss "potential" fraud. It is actual and extensive. The more the Navy soft-pedals the fraud, the less credibility it has. If the fraud is real enough to have had the effect Ms. Duchnak describes, it is well past time for the Navy to drop references to "potential" fraud.

⁸ See Appendix IV.

Finally, the Navy claims credit for “discoveries made by the Navy.” The Navy did make one important discovery, it’s true. Its employee flagged the low Potassium-40 (K-40) data that first raised the issue of fraud. But after that, the Navy closed its “eyes” and “ears.” It made no further “discoveries.” Rather, it ignored them.

In June 2016, for example, Anthony Smith, one of the whistleblowers, took the Navy and regulators on a tour of the shipyard during which he detailed some of the fraudulent activities he participated in. The Navy has never, to this day, spoken to him to follow up.

More than a year before this *Draft Review* was released, on June 29, 2017, Greenaction filed its NRC Petition seeking to revoke Tetra Tech’s federal license, supported by affidavits signed under penalty of perjury by numerous former radiation workers at HPNS who have come forth to blow the whistle on Tetra Tech’s fraud and the Navy’s complicity in it. They detailed six types of fraud: (1) fake sampling, in which soil samples were reported to have been taken at one location when they were actually taken from another; (2) samples and their analytical results were discarded because they came back too “hot;” (3) scanning data were altered to make them appear acceptable; (4) building survey data were fabricated; (5) radioactive material in soil was inadequately remediated, resulting in potentially contaminated soil being used as backfill for trenches at the Shipyard; and (6) Portal Monitor procedures were altered resulting in potentially radioactively-contaminated soil being allowed to be shipped offsite to points unknown.⁹

Greenaction obtained sworn affidavits from Archie Jackson, Bert Bowers, Susan Andrews, Arthur Jahr, Richard Stoney and Robert McLean, each of whom documented improper activities. Their statements are readily available, as they are exhibits in support of its June 2017 NRC Petition. Greenaction has repeatedly urged the Navy to interview them. The Navy has never, to this day, done so. Sadly, Mr. Jahr has since passed away; any untapped knowledge he may have had is now gone forever.

⁹ See NRC Petition, p. 1.

Greenaction also provided the Navy with two lists of additional witnesses, totaling approximately 50 people. The Navy ignored them. To the best of our knowledge, none of these witnesses have ever been contacted, despite more than a year's urging that the Navy interview them.

Instead of doing what was called for – investigating the full extent of the fraud's impact on the cleanup – the Navy allowed Tetra Tech to *investigate itself*, and accepted its self-serving and false claims the fraud was minimal and closed its eyes and ears to the whistleblowers.

Rather than conduct a meaningful investigation, the Navy spent months and \$8.8 million, according to Ms. Duchnak, on a "data review," whose purpose was not to find if more fraud took place, but rather to statistically validate Tetra Tech's bogus data. However, in results that were hugely surprising to the Navy but to no one else who has followed the disastrous radiation remediation, the data review not only supported the whistleblowers' testimony, it found much more evidence of potential fraud than even the whistleblowers said – approximately 40%!

Even these remarkable findings underplayed the full extent of the evidence of fraud. The EPA's review of precisely the same data found more than double the data problems the Navy did. EPA's review of data from Parcel G trench units, for example, found a whopping 97% of the data were questionable – virtually all of it.

In addition, two Tetra Tech supervisors have pled guilty to federal charges arising from their role in the fraud and are currently serving eight-month sentences. More charges may be forthcoming.

Despite the plethora of proof, however, the Navy continues to treat the proven facts as mere allegations. Two years ago they were allegations. In the ensuing time those allegations have been proven.

Forced to confront irrefutable proof dashing the Navy's hope that Tetra Tech's data was salvageable, in December 2017 it finally announced the inevitable conclusion it

had been seeking to avoid all along; all of Tetra Tech's data has to be thrown out. The Navy's point man on the project, Derek Robinson, promised multiple times publicly that all Tetra Tech's work would be redone, starting with resampling all locations where the fraudulent firm worked.

EPA heard the same promises Greenaction members did. Here's how Lily Lee, the EPA's HPNS Site Manager described what the Navy said in her interview for the *Draft Review*: "*The Navy, as the lead on cleanup, has responded through a comprehensive radiological data evaluation, increased oversight of ongoing radiological work, development of plans to resample all radiological survey units on site that involved Tetra Tech EC Inc., and increased community involvement outreach.*" (Italics in original, underline added.) Similarly, as Angeles Herrera, the Assistant Director of EPA's Superfund Division, Federal Facility and Site Cleanup Branch, wrote in his August 14, 2018 transmittal letter of the EPA's comments to the *Draft Parcel G Work Plan*, "The Navy has agreed to retest all of the survey units where Tetra Tech EC Inc. did previous radiological work." (Emphasis added.)

"Resample all survey units" was what the Navy promised.

As we pointed out in our comments to the *Draft Parcel G Work Plan*, the Navy has once again demonstrated that its promises are false. Rather than live up to its promises, the Navy's draft plan only intends to resample a small percentage of survey units. It must not be allowed to get away with reneging on its promises when it comes to either the *Parcel G Work Plan* or this *Draft Review*: it must commit to resampling all Tetra Tech's work.

This *Draft Review*, however, fails to even acknowledge the *Draft Parcel G Work Plan* exists, let alone disclose the extremely limited sampling and scanning it contemplates.

This *Draft Review* was published more than six months after the Navy finally abandoned its efforts to salvage Tetra Tech's data through its data review. Yet there is scant mention of the sequence of events leading to the status that is supposed to be

reported in a Five-Year Review. No mention that the fraud was discovered in 2012. No mention that Tetra Tech admitted to fraud in 2014. No mention that whistleblowers came forward in 2016. No mention of their testimony proving widespread fraud. No mention that the Navy believed a fraudulent firm more than whistleblowers' statements under oath. No mention of the disastrous (to the Navy) results of the data review. No mention of EPA's finding that the Navy's data review missed half the data problems. No mention that the Navy has admitted all Tetra Tech's data is being thrown out. No mention of the Navy's public promises to finally own up to the fraud and do what should have been clear from the beginning; start over. No mention that the Navy's *Draft Parcel G Work Plan* reneges on the Navy's multiple promises to retest all Tetra Tech's work and only test one-third of the trench units and one-half of the buildings.

Here is the bureaucratese the Navy employs instead, using Parcel B-1 as an example: "The remedies completed to date for Parcel B-1 are protective of human health and the environment, noting that the radiological removal actions are being retested." Identical language is used in Section 8, Protectiveness Statement, for Parcels B-2 C, D-2, E, G, UC-1, UC-2 and UC-3.

These statements are false. Given that the Navy has publicly and repeatedly stated it will no longer rely on any Tetra Tech data, there is no factual basis for claiming the radiological remedies "completed" by Tetra Tech are "protective of human health and the environment." This can only be true if the Navy relies on Tetra Tech's discredited data – data even the Navy now agrees, however reluctantly, is useless. As we return to in our comments on Protectiveness Statements (see section II G below), the only accurate answer to the question of protectiveness is "no". There are no data demonstrating protectiveness whatsoever. Unless and until all of Tetra Tech's work is properly and comprehensively resampled and, where necessary, re-remediated, the Navy cannot claim radiological protectiveness.

The phrase, "noting that the radiological removal actions are being retested," does not substitute for the Navy's duty to be factually accurate in its Statement of Protectiveness. "Noting" that all of Tetra Tech's work must be redone is like saying that

the Navy's oversight was exemplary, "noting that the Navy squandered more than \$200 million and more than a decade."

The Navy must not be allowed to mislead the public and regulators by dismissing the fraud's impact on the cleanup anymore.

B. Parcel A

The *Draft Review* completely excludes Parcel A: "Parcel A is not discussed in this report because the parcel required no action under CERCLA." (p.1-2). The reason Parcel A "required no action under CERCLA" is because the Navy did an incompetent job investigating the possibility of radiological contamination there.

Earlier this year, Greenaction brought forth both eyewitness and documentary evidence – including sample results – proving the original Parcel A storm water and sanitary sewer systems contained elevated levels of radionuclides that should have been investigated but never were. Greenaction has requested that the Navy and regulators report all information they have concerning what happened to the Parcel A sewers and their associated soils. The sewer pipes may have been disposed of illegally; it is so far unknown whether contaminated pipes were disposed of at facilities not licensed for radioactive waste. Greenaction has developed information indicating the soils from the Parcel A sewer systems were essentially "pushed over" the hill atop Parcel A into neighboring locations as part of grading Parcel A prior to development. We have asked both EPA and the Navy to investigate. So far as we know, both have flatly refused.

A description of an investigation of Parcel A's sewer systems and associated soils must be added into the *Draft Review*.

C. Reliance on Tetra Tech Data

The Navy improperly continues to rely on Tetra Tech data for the Five-Year Review despite already agreeing to discard it. The Index of the review lists 117 Tetra Tech, EC Inc. documents, 91 of which are entitled either "Final" or "Final Final" status

surveys, none of which have been made available to the public. Greenaction has requested these documents in writing but the Navy refuses to provide them. Accordingly, Greenaction has requested them through a Freedom of Information (FOIA) request.

There are no rational reasons the Navy should rely on or cite any of Tetra Tech's discredited data for any purpose. The *Draft Review* should be scrubbed of all Tetra Tech radiological data; all Tetra Tech documents listed in the References should be excised.

D. Investigating Soil That Was Improperly Allowed to Leave HPNS

Greenaction has provided credible evidence to the Navy that soil, improperly scanned at Radiological Screening Yard ("RSY") pads or the Portal Monitor, or both, resulted in a significant amount of potentially radiologically contaminated soil being permitted to exit Hunters Point Naval Shipyard improperly. Some of the soil was allegedly disposed of at landfills not licensed for low-level radioactive waste around the San Francisco Bay Area. (See NRC Petition, pp. 22-25.)

It is incumbent on the Navy to track down that soil and take appropriate actions to insure that unwitting people are not exposed to radioactive contamination that originated at HPNS. The *Draft Review* should include a statement that the Navy will investigate and will publish a plan to do so that will be open to public comment.

III. RADIOLOGICAL COMMENTS - Specific

A. Section 1 – Introduction

The Introduction kicks off the litany of half-truths that litter the Navy's *Draft Review*. It claims it, "identifies issues found during this fourth five-year review and recommendations to address them."

In addition to the issues already mention in section 1A above, the *Draft Review* elides the Navy's own lack of oversight in permitting the fraud to take place under its nose for years, and the regulatory agencies' failures of oversight as well. The Navy should own up to the ugly truth, not attempt to bury it.

B. Section 2 – Site Background

Section 2.5.2 of the *Draft Review*, Future Land Uses, fails to acknowledge that during the five-year review period the proposed use of Parcel G was changed from almost no residential use to the entire parcel being open to residential use. Nowhere in the *Draft Review* is there a discussion of how this changed use will impact the remediation.¹⁰

C. Section 3 – Response Action Summary

The introduction to Section 3 states that Section 3, among other things, “describes the implementation status of the selected remedy for each parcel.” (p. 3-1). But this is manifestly untrue when it comes to the radiological remedies.

The *Draft Review* provides virtually no information about the status of the re-investigation of Tetra Tech’s work. Although the Navy released a *Draft Parcel G Work Plan* in June 2018, a month before the release of the *Draft Review*, there is not a single mention of it.

The information about the other parcels is just as scant. Although the Navy announced publicly at the end of 2017 that all of Tetra Tech’s work would be redone, the *Draft Review* says absolutely nothing about when draft work plans for the other parcels will be released; what the resampling strategies will be; a timeline for all such actions; or anything else.

The only thing the *Draft Review* says is that “All radiological work is currently being reviewed to determine if current site conditions are compliant with the RAOs.” (Section 3.3.2.1, p. 3-12, for parcel B, for example). What the “review” consists of is not addressed, as if the Navy has no idea what to do and as if it hasn’t already decided exactly what to do.

The Navy must acknowledge the truth; none of the sites Tetra Tech worked on are compliant with the RAOs. The Navy must also abide by what it has promised publicly in

¹⁰ *Feasibility Assessment for Evaluating Areas with Residential Land Use Restrictions, Parcel G, Hunters Point Naval Shipyard, San Francisco, California*, Nov. 30, 2016.

more than one forum: all Tetra Tech's data have to be thrown out and the Navy must start over. All areas Tetra Tech worked on have to be resampled and if necessary, re-remediated, as the Navy has promised.

While the *Draft Review* omits essential information, it includes irrelevant data as if it were "factual." For example, the Navy congratulates itself on all the work that has been done; in Parcel C, for example, the Navy touts all that was accomplished: "Radiological surveys and remediation have been performed for all radiologically impacted buildings (203, 205 and discharge tunnel, 211, 214, 224, 241, 253, 271, and 272), storm drains, and sanitary sewers, except for Buildings 211 and 253. In total, 37,572 cubic yards of soil was removed from 19,260 linear feet of sanitary sewer and storm drain lines; approximately 987 cubic yards of soil was disposed off site as LLRW (TIEC, 2016d)." (p. 3-18.) Similar summaries are included as to the other parcels as well.

But all that work was done by Tetra Tech. None of the work they claim to have done can be relied on. It all has to be resampled. So why does the Navy list these actions as if they were accomplishments? They are not. Instead, the Navy's summaries of how much dirt was moved, how many buildings were scanned, etc., only serve to illustrate the enormous impact of the fraud on the cleanup. What the Navy fails to say is that each and every one of those "accomplishments" are useless because Tetra Tech's data are useless.

These so-called accomplishments should be removed from the *Draft Review*. They have no relevance to assuring protectiveness.

D. Section 4 – Progress Since Last Review

Failure to address the Tetra Tech fraud in this, the *Draft Fourth Five-Year Review*, continues its omission in the *Third Five-Year Review* ("Third Review"), completed in November 2013. The original suspicions about Tetra Tech were raised a year before, in 2012. Yet nowhere in the *Third Review* is there the slightest hint that Tetra Tech's data might be fraudulent. None of the recommendations for any of the parcels in the *Third Review* include any mention of the discovery of the fraud or what the Navy did about it

between its discovery and the release of the *Third Review*. The Third Review included no recommendations at all concerning the fraud the Navy already knew about.

In Parcel D-2, for example, the *Third Five-Year Review* omitted a protectiveness statement “because the parcel was deemed to require no further action following completion of radiological remediation.” (4.5, p. 4-3). But all Tetra Tech’s data should have been suspect in 2012, calling into question the “completion of radiological remediation.”

When it comes to the radiological fraud, the Navy played “hide the ball” in 2013 and obviously intends no change now. The Navy must be required to tell the whole truth about the radiological disaster it allowed to happen. It must not be allowed to dodge the truth or its responsibility any longer.

E. Section 5 – Five-Year Review Process

Section 5.2, Document and Data Review, states, “As part of this five-year review, documents and data related to remedy implementation were reviewed for each parcel. The reviews primarily focused on (1) documents and data that provide information on the technical and regulatory considerations that led to remedy selection and implementation, (2) documents that demonstrate remedy completion, and (3) documents and parcel-specific data that demonstrate the remedies continue to be protective of human health and the environment.” (p. 5-2.)

This is a microcosm of all that is wrong with the Navy’s approach to the post-Tetra Tech period. The Navy admits it doesn’t take a dispassionate, objective view. It focuses on “documents that demonstrate remedy completion.” It should be focusing on all relevant documents and data, whether they demonstrate compliance or not, especially if not.

And, when it comes to Tetra Tech’s work, “parcel-specific data that demonstrate the remedies continue to be protective” are non-existent. It’s all unreliable. None can demonstrate protectiveness or anything else.

Furthermore, the Fourth Five Year Review fails to look forward. It must discuss the need to amend all the existing RODs as they relate to radiological contamination, and Parcels E and E-2 for chemical contaminants. The current five year review process is the appropriate place to discuss the need for ROD amendments to account for new circumstances.

In fact, the Navy has done precisely that in the past. For example, it discussed the possibility of an amendment to the Parcel B ROD in the First Five Year Review: "The future RA process for Parcel B could include a technical memorandum in support of a ROD amendment, a proposed plan (with community involvement), a ROD amendment, RD, and RA, followed by closeout activities." The Parcel B ROD was eventually amended, in part because of the recommendation made in the first review:

In 2007-2008, the Navy prepared two technical memoranda...in support of amending the ROD as recommended by the First 5-year review. These memoranda provided the technical foundation for identification of revised remedial alternatives and preparation of a proposed plan and subsequent amended ROD for Parcel B. (Second Five Year Review at 3.5.8).

The *Draft Review* should provide recommendations for the steps to be taken in the coming five years, informed by which new information that was not considered when the RODs were approved.

F. Section 6 – Technical Assessment

The *Draft Review* is internally inconsistent. For example, Section 6 states, "Published documents report the completion of radiological surveys and remediation in IR-07/18 and Parcels B-1, B-2, C, D-1, D-2, E, G, UC-1, UC-2, and UC-3." (p. 6-6.)

Section 6.1.6, Radiological Surveys and Remediation, asks, "*Are the radiological surveys and remediation remedies implemented in IR-07/18 and Parcels B-1, B-2, C, D-1, D-2, E, G, UC-1, UC-2, and UC-3 functioning as intended by the decision documents?* YES (for IR-07/18 and Parcel D-1); NO (for Parcels B-1, B-2, C, D-2, E, G, UC-1, UC-2, and UC-3).P. 6-6).

Again, the Navy cannot claim that remediation has been "completed" but in the next breath admit, "Well, not really." Having determined under public pressure and the insistence of the EPA that all Tetra Tech data are unreliable, the Navy must drop any pretense that radiological work was "completed." The *Draft Review* should consistently say that none of Tetra Tech's work was "completed" and that the remedies it implemented are not protective.

As stated above, The Navy downplays the fraud throughout, including in Section 6. For example, it states, "In January 2018, the Navy determined that a significant portion of the radiological survey and remediation work completed to date was compromised by potential manipulation and/or falsification of data by one of its radiological remediation contractors. Compromised data were identified in reports associated with Parcels B-1, B-2, C, D-2, E, G, UC-1, UC-2, and UC-3. Again, this is an understatement. "A significant portion" of Tetra Tech's data was not compromised; all of it was. And characterizing the fraud as "potential" is belied by the facts, including those provided by BRAC's boss. It is past time for the Navy to stop denying that the fraud actually took place.

In Section 6.2.3, Changes in Risk Assessment Methods, the Navy claims it can substitute a 2014 EPA supplemental guidance in place of the risk assessment and, without proof, further claims equivalency: "Use of these updated default exposure parameters in place of the original values used in the risk assessments for each of the parcels primarily results in increasing the RBCs for the adult receptors. The increase is not significantly different from the values estimated in the original risk assessments. As such, EPA changes to default exposure parameters do not affect the protectiveness of the remedies." (p. 6-12.)

However, as the EPA made quite clear in its comments to the *Draft Parcel G Work Plan*, this substitution is improper; it impermissibly changes the ROD:

At this stage of the CERCLA process, the cleanup goals have already been legally established. A new Radiation Risk Assessment is ordinarily only performed as part of a Five-Year Review to evaluate whether or not the original RG's are still protective. EPA has separately recommended that the Navy conduct this review, and, if any of the RGs are found to be no longer protective using the most current risk calculators, propose amendments to the Parcel G ROD to ensure protectiveness. For the current work plan, however, the current RGs still govern the cleanup and if any material is found on Parcel G that exceeds the RGs established in the Parcel G ROD for the ROCs, excluding naturally occurring and anthropogenic background, the material should be removed and disposed of in accordance with the ROD and other applicable laws and regulations. (p.3.)

On the other hand, Greenaction would welcome it if the Navy did formally what it is attempting to do by sleight of hand – reopen the ROD to include newer, more protective standards. We urge the Navy to accept EPA's suggestion that as part of the five-year review, it formally reassess the standards set in the nine-year-old ROD to make them more protective.

G. Section 7- Issues Recommendations and Other Findings

The *Draft Review* claims in Section 7 that, "It is anticipated that the radiological rework will span 5 years and be completed prior to the next five-year review." (p. 7-2.) This is yet another example of the Navy's wishful thinking. Consider that: the Navy claims it can redo more than a decade's work by Tetra Tech in less than half that time; to date the Navy still has not obtained an approved work plan for even a single parcel that needs to be reworked, nine months after the Navy finally acknowledged it would be necessary; and the Navy includes no timeline whatsoever detailing what activities will take place or when. Finally, consider this statement from Ms. Duchnak's victim impact statement: "The Navy estimates that the fraud committed by Mr. Hubbard and others has set back the planned transfer of HPNS property to the City by an approximate decade."

The Navy needs to stop stating hope as fact. It cannot claim in the *Draft Review* that the project will be delayed five years, when BRAC's boss says it will be double that.

It is this kind of transparently false optimism that continues to taint the Navy's relations with the community.

Section 7 also states that the "Navy has determined that a significant portion" of Tetra Tech's data was compromised. (p. 7-2.) As mentioned before, this is, at best, an understatement. All of Tetra Tech's data are compromised. The Navy admitted that publicly more than nine months ago. The *Draft Review* must say that clearly and without evasion.

H. Section 8 - Protectiveness Statement

The *Draft Review* repeats the following uninformative statement it makes as to Parcel B-1: "The remedies completed to date for Parcel B-1 are protective of human health and the environment, noting that the radiological removal actions are being retested." (p. 8.1.) The identical language is used in reference to Parcels B-2, C, G, UC-1, UC-2 and UC-3. (pp. 8-1 through 8-4.)

The Five-Year Review must be factual. It must start by admitting the radiological remedies in those parcels are not currently protective. This is the inevitable conclusion of the EPA's critique of the Navy's data review. And it must acknowledge that the "radiological removal actions" will be retested, not that they "are being retested." The Navy has not obtained regulatory approval for any retesting yet. And if the Navy refuses to accede to the EPA suggestions in its comments to the *Draft Parcel G Work Plan*, any retesting may have to await completion of the FFA's mandated dispute resolution process, further delaying when the Navy can truthfully claim the parcels "are being retested." As stated above, the revised *Draft Review* should describe the radiological work the Navy intends to do in response to the fraud in each parcel, along with a timeline of activities.

The protectiveness statements for Parcels D-1 and D-2 are equally dishonest. The *Draft Review* says the remedy for D-1 "is expected to be protective." (p. 8-3.) Of course, the Navy has "expected" a lot that did not turn out to be true. It expected Tetra Tech to do a proper job. It expected that it had the capacity to adequately supervise Tetra Tech. It expected to obtain free clearance in multiple parcels by now. Regulators and the public

have no reason to believe that the Navy will meet its expectations – it has not so far and, if the *Draft Parcel G Work Plan* and the *Draft Review* are any indication, the Navy has learned nothing from the Tetra Tech fraud and will blithely continue as it has done so far.

As to Parcel D-2, the Navy follows the template it used in Section 3; cite all the “work” it has done and then add the *non sequitor*, “Radiological surveys and removal actions completed in Parcel D-2 were potentially compromised, and corrective actions are required to determine if the RAOs have been achieved.” It does not matter how many cubic yards of soil remediation were fraudulently “completed,” though it is instructive of the impact of the Navy allowing the fraud to take place over so many years.

I. Figures

Figures 3 through 13 are inaccurate. Each purports to show an “Overview of Remedy Components,” for a specific parcel. Yet none includes radiological components; none of the figure’s “legends” even reference radioactivity.

The Navy knows where Tetra Tech (as well as other radiological contractors) worked and can include such information. For example, the sewer systems have been identified as major radiological remediation sites. The Navy can and should include anticipated radiological work either in these figures or create separate radiological overviews of remedy components.

IV. NON-RADIOLOGICAL

A. The Draft Review Must Evaluate Protectiveness Consistent with Up-to-Date, Scientific Sea and Bay-Level Rise Projections

The *Draft Review* surprisingly and unacceptably fails to consider essential new data that was not available when the remedies were selected. The most important missing data are the latest scientific projections of sea-level rise. Because of the intense toxicity of the hazardous and radioactive wastes (including residue from atomic bomb testing) that current remedies leave capped onsite, and the persistence of

that toxicity, the Navy courts long-term disaster if its Bay-level rise assumptions are wrong. The *Draft Review* must not only evaluate protectiveness in light of estimates of Bay-level rise in the coming decades, but its threat from Bay-level rise centuries into the future as well. If the Navy is wrong now and global warming causes the Bay to rise enough to overwhelm current remedies, the health of nearby residents, subsistence fishers, people recreating on the proposed “open space” and the hundreds of thousands of people living along the San Francisco Bay will all be at unacceptable risk.

State of California governmental agencies have done extensive research, analysis and reporting on the latest projections for rising sea levels – yet the *Draft Review* appears to have ignored this important science.

The San Francisco Bay Conservation and Development Commission (BCDC) is a planning and regulatory agency with regional authority over San Francisco Bay, the Bay’s shoreline band, and the Suisun Marsh. BCDC was created in 1965 and is the nation’s oldest coastal zone regulatory agency. Its mission is to protect and enhance San Francisco Bay and to encourage the Bay’s responsible and productive use for this and future generations. BCDC leads the Bay Area’s ongoing multi-agency regional effort to address the impacts of rising sea level on shoreline communities and assets.

BCDC’s Adapting to Rising Tides project (ART) (<http://www.adaptingtorisingtides.org/>) started in 2010 when BCDC and NOAA’s Office for Coastal Management brought together local, regional, state and federal agencies and organizations as well as non-profit and private associations for a collaborative planning project along the Alameda County shoreline. The project worked to identify how anticipated current and future flooding associated with global warming will affect communities, infrastructure, ecosystems and the economy.

Since then, the ART has continued to both lead and support multi-sector and cross-jurisdictional projects that build both local and regional capacity in the Bay Area

to plan for and implement adaptation. These efforts have enabled ART to test and refine adaptation planning methods (ART Approach) to integrate sustainability and transparent decision-making from start to finish, and foster robust collaborations that lead to action on adaptation. BCDC has conducted extensive scientific research. Its sea level rise projections and mapping are widely accepted as sound by government agencies. Adapting to Rising Tides Bay Area Sea Level Rise Analysis and Mapping Project has the latest data that the Navy must use in development of revised remedies to continue to assure protectiveness into the future.¹¹

The State of California Ocean Protection Council's (OPC) *2018 State of California Sea Level Rise Guidance* is also vitally important to consider in developing safe remedies.¹²

The 2018 update of the Guidance was created by the OPC, California Natural Resources Agency, Governor's Office of Planning and Research, and the California Energy Commission. The Guidance provides the best available data on sea level rise projections for California which should be used by state agencies and local governments in their planning, permitting, and investment decisions.

The Remediation Design for Parcel E-2 is deficient given updated sea level rise projections. In Section 6.3 (Technical Assessment Question C, pp. 6-15), the *Draft Review* states:

The estimated sea-level rise in San Francisco under three future greenhouse gas emission scenarios (referred to as representative concentration pathways [RCPs]) is summarized below:

- RCP 8.5 is consistent with a future in which there are no significant global efforts to limit or reduce emissions. In 2100, the likely sea-level rise associated with this scenario ranges from 1.6 to 3.4 feet.

¹¹ See <http://www.adaptingtorisingtides.org/project/regional-sea-level-rise-mapping-and-shoreline-analysis/> and <http://www.adaptingtorisingtides.org/wp-content/uploads/2018/07/BATA-ART-SLR-Analysis-and-Mapping-Report-Final-20170908.pdf>

¹² http://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20180314/Item3_Exhibit-A_OPC_SLR_Guidance-rd3.pdf

- RCP 4.5 is a moderate emissions reduction scenario and assumes that global greenhouse gas emissions will be curtailed. In 2100, the likely sea-level rise associated with this scenario ranges from 1.2 to 2.7 feet.
- RCP 2.6 is a stringent emissions reduction scenario and assumes that global greenhouse gas emissions will be significantly curtailed. In 2100, the likely sea-level rise associated with this scenario ranges from 1.0 to 2.4 feet.

Based on the information above, a contingency of up to a 3-foot increase in sea level was considered in designing the crest elevation for Parcels E and E-2.

No other information has been identified to suggest that the remedies may not be protective of human health or the environment. (p. 6-15.)

The assumption greenhouse gas emissions will curtail is speculative at best, and should not be used as a guideline in remediation planning. This is especially true with the current EPA's efforts to abandon stringent greenhouse gas and other emissions limits from coal fired power plants and other industries.

BCDC's "Adapting to Rising Tides Bay Area Sea Level Rise Analysis and Mapping Project" outlines a range of likely sea level rise scenarios (see Appendix III, p. 13). The upper bound of these scenarios is 5.5 feet (66 inches) sea level rise by the year 2100. Adapting to Rising Tides also considers a 100-year extreme tide (see appendix III, p. 15), which is the coastal water level elevation that has a 1 percent chance of occurring in any given year. A 5.5 feet (66 inches) sea level rise with the 100-year extreme tide would create a tide 9 feet (108 inches) above Mean Higher High Water (MHHW, the average of the high water mark of each tidal day observed over the National Tidal Datum Epoch).

Even minimal risk of catastrophic events must be considered and planned for due to the dangerous radioactive and contamination in close proximity to people and the Bay.

According to the 2018 State of California Sea-Level Rise Guidance (Appendix II, p. 57):

- Sea level rise will reach 5.7 to 6.9 feet by 2100 under the medium to high risk aversion scenario.
- Sea level rise will reach 10.2 feet by 2100 under the H++ scenario (detailed below).

The 2018 State of California Sea-Level Rise Guidance suggests that projects with a lifespan beyond 2050, that have a low-tolerance for risk (i.e., hazardous waste & toxic storage sites) should use H++ scenario. H++ scenarios can be considered the “worst-case” possibility and describe an extreme sea level rise scenario that would result from a catastrophic event (i.e., the collapse of the West Antarctic ice sheet), especially under high emission scenarios. The projected sea level rise under the H++ scenario is 10.2 feet by 2100.

The projections used by the *Draft Review* are inadequate because they do not consider the most up to date sea level rise projections or consider a future in which emissions will increase. The State of California Sea Level Rise Guidance 2018 Update has estimated the chance of sea level rise meeting or exceeding various heights in various years (see Appendix I, p. 58). It estimates these percentages under two scenarios: one in a future with low carbon emissions and one in a future with high carbon emissions. The likelihood of sea level rise exceeding 3 feet by 2100 under a future with low emissions is 7%. The likelihood of sea level rise to exceed 3 feet by 2100 with high future emissions is 28%. So, the current design has a 7-28% chance of failure due to sea level rise by 2100, depending on the future carbon emissions. This risk is unacceptable.

The risk of flooding and inundation is especially important for Parcel E-2, due to its history of disposal of hazardous and radioactive waste. According to *Adapting to Rising Tides*, Sea level rise and storm events may cause flooding or groundwater intrusion to contaminated sites and landfill waste containment systems. Temporary or permanent surface flooding, erosive tidal or wave energy, and elevated groundwater levels could cause the release of

hazardous substances with potentially significant consequences on public health, the environment, and the local economy.¹³

The release of any amount of toxic or radioactive substances in Hunters Point would be detrimental because the community is already disproportionately burdened by a multitude of environmental hazards, and would have a significant negative impact on the entire Bay ecosystem.

Both BCDC and the State of California Sea-Level Rise Guidance project sea level rise to surpass the 3-foot mark accounted for in the Navy's design considerations. Three feet above mean sea level is generally considered in the middle of the likely range of sea level rise by 2100. When planning for construction in an area that is as dangerous when flooded as Parcels E and E2 with all the toxic waste they contain, the upper bound of all sea level rise scenarios should be used, which according to BCDC is 9 feet and according to State of California Sea-Level Rise Guidance is 10.2 feet.

Accordingly, the remedies that could be affected by sea-level rise significantly higher than the unreasonably low assumptions made by the Navy must be reconsidered in this review.

A. Potential Flooding of the Revetment Wall Must Be Considered

As depicted in the Engineering/Remediation Resources Group, Inc.'s Shoreline Revetment Detail the highest point of the design is the concrete sea wall, standing at approximately 7 feet above mean sea level. This height is insufficient in light of current updated scientific sea level rise projections referenced above. Combined with the possibility of high tides, king tides, storm surges, wind driven waves and El Nino, all of the sea level rise possibilities outlined in the previous section indicate there is a strong likelihood of the currently designed sea wall flooding.

¹³ SF BCDC Adapting to Rising Tides. "Contaminated Lands", p. 1.
<http://www.adaptingtorisingtides.org/portfolio/contaminated-lands/>

Remedial design should reflect the possibility which would most effectively protect the residents of Bayview Hunters Point. Considering the catastrophic health hazards which could result from Parcel E-2 flooding, the H++ scenario should be used, accounting for sea level rise of 10.2 feet by 2100. In conclusion, the construction of a revetment sea wall at 7 foot is inadequate, and will likely expose additional contaminants to a community and San Francisco Bay that are already overburdened with multiple environmental hazards.

B. Concerns about Slurry Wall Construction

The *Draft Review* does not address the effect of sea level rise on slurry walls. As sea levels rise, the levels of ground water tables rise as well. Nor does it account for how the rise of groundwater will affect the integrity of the slurry walls. The design process seems to be using current groundwater levels, but not planning for new levels/flow directions/pressures. The effective life cycle of these slurry walls is not addressed, and if it is more than 10-15 years, which it well should be, these sea level rise outcomes should be a major design consideration. This also of course impacts the "remedy" of leaving contamination buried at the waterfront.

Constructing a slurry wall on fractured bedrock is a poorly engineered idea which fails to provide a long term solution. While the review indicates that the land is not an aquifer due to its limited flow capability, ineffectiveness remains. Regardless of the depth of the slurry wall, water will percolate through the cracks of the bedrock on which the slurry wall sits. This will enable the interaction of the contaminated landfill groundwater with both the San Francisco Bay water and surrounding uncontaminated groundwater.

The *Draft Review* additionally fails to address any seismic activity that may occur, which could both destroy the slurry wall and potentially further fracture the bedrock. This should be a major concern as San Francisco is right on the San Andreas

Fault and, is highly susceptible to major, potentially catastrophic earthquakes like the one on April 18, 1906.

The Navy's reliance on below-ground barriers and capping of contaminated soil with a few feet of barriers are not safe or sustainable remedies for the extremely contaminated land of Parcel-E and E 2. In particular, caps are extremely vulnerable to flooding with increased water levels caused by sea level rise.

C. The Slurry Wall Will Not Stop Rising Groundwater Inundation of Contamination

Increased water levels in the Bay and storm surges are not the only flooding and inundation threat to the "remedy" of leaving buried contaminated waste so close to the Bay. As sea levels rise, so will groundwater.

A study by the US Geological Survey and Yale University states "...as sea level rises, so will groundwater levels, and since underground infrastructure - including sewer pipes and utility equipment - was built with historical groundwater levels in mind, this could lead to expensive headaches for coastal communities."¹⁴

A slurry wall and capping on top of contamination will do nothing to prevent rising groundwater from inundating and potentially flooding the area, resulting in an environmental and health disaster.

D. The Vulnerability of Bayview Hunters Point Residents to Pollution Must Be Factored Into the Review

The Navy's remediation of the Shipyard Superfund Site must continue to be protective of health and the environment. It must be based on science and take into account the current reality of the health crisis and environmental conditions at and

¹⁴ <http://www.climatecentral.org/blogs/sea-level-rise-may-raise-groundwater-levels>

near the site, including Bayview Hunters Point, and how potential failure of remedies at the shipyard could significantly exacerbate them.

Unfortunately, the approved remedies do not take into consideration the well-documented health vulnerabilities of residents. Remedies must be based on facts, not on abstract “health” levels that are not appropriate for Bayview Hunters Point.

It is a well-established fact that Bayview Hunters Point is heavily impacted by decades of pollution from industry and the military, as well as from two freeways, the City’s main sewage treatment plant, dozens of contamination sites, freight transport, the Port of San Francisco, and under-regulated and unregulated businesses operating with little or no government oversight.

In January 2017, the Office of Environmental Health Hazard Assessment (OEHHA), on behalf of the California Environmental Protection Agency (CalEPA), released Version 3.0 of the California Communities Environmental Health Screening Tool (CalEnviroScreen). CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. CalEnviroScreen measures vulnerability through evaluating and quantifying pollution exposures, environmental effects, sensitive populations and socioeconomic factors.

CalEnviroScreen 3.0 found that BVHP is one of the communities in the entire state most at risk from pollution, and concluded that it has a higher pollution burden than 90% of the state.

CalEnviroScreen 3.0, quantifies this community’s significant exposure to environmental hazards, ranking it in the 99th percentile for diesel Particulate Matter, 98th percentile for groundwater threats, and 86th percentile for hazardous waste. It found BVHP to be in the 98th percentile for asthma.

Based on the facts regarding these significant and alarming vulnerabilities, the remedies set forth in the various RODs must be re-evaluated and new, more protective remedies adopted. The appropriate health protective remedies will require an expanded, comprehensive and safe cleanup and removal of as much of the hazardous and radioactive waste as possible from the site – not merely capping waste in place. Leaving radioactive and hazardous wastes buried at the Superfund Site, next to existing and proposed neighborhoods, under what is proposed to be recreational “open space,” and next to the San Francisco Bay waterfront threatened by rising sea levels – projected to be as more than 5 feet by 2100 under “moderate” assumptions and climbing even higher in future centuries – is purely reckless and unacceptable.

E. The Entire Shipyard Superfund Site and Adjacent Areas Must Be Comprehensively Retested, With Independent Community Oversight

The Navy must carry through with its public commitment to properly retest all areas, not just some areas, where Tetra Tech did radiological work at the Shipyard. The Navy and other government agencies must test the entire Shipyard Site and adjacent areas, including any locations that information provided by whistleblowers, residents and other reliable sources indicate may have been contaminated from Shipyard operations.

Scanning is insufficient and unacceptable if not combined with comprehensive core sampling. Testing must be thorough and comprehensive:

- a. Radiological core sampling must be conducted of the entire site and adjacent areas. It is imperative that all core samples go at least 9 feet beneath the surface, .
- b. The core sampling should create a 2m x 2m mapping grid,
- c. All core sampling must follow split sampling protocols.
- d. All ground water should be tested for radiation contamination, including aquifers A and B,

- e. The Navy must immediately begin working with the State of California and the Bay Area Air Quality Management District to develop and implement standards for fugitive radiological dust, and
- f. Radiologically contaminated soil should be marked with an orange colored dye. Applying this would explicitly identify important areas, help prevent accidental shipments of radioactive soil to landfills, and act as a dust suppression measure.

F. Land Use

Simply stated, kids and other residents should not live, work or play next to or on top of hazardous and radioactive waste. The effect of a botched and inadequate cleanup reverberate far beyond the shipyard, impacting nearby San Francisco neighborhoods, the Bay itself and all who enjoy it and rely upon it, including subsistence fishers, and communities along the Bay.

We call on the Navy and regulatory agencies to reconsider the RODs, as part of this five-year review, to incorporate newer and more protective cleanup standards and a comprehensive remediation.

B. CONCLUSION

The widespread fraud and botched cleanup, the lack of proper regulatory oversight, the lack of transparency and the government's inappropriate relationship with mega-developer Lennar/Five Points have undermined a proper cleanup of the contamination and resulted in the reckless and unscientific "remedies" being evaluated in the *Draft Review*. This is the time and process to re-evaluate the "remedies" because they:

- are not protective of public health or the environment,

- do not take into account the fact that Bayview Hunters Point residents have been found by the State of California to be highly at risk and vulnerable to pollution due to health, environmental and socio-economic indicators,
- endanger San Francisco Bay,
- are based in significant part on “data” produced by Tetra Tech despite the widespread fraud committed by that company during years of “remediation” work at the Superfund site,
- are not based on the pending large scale retesting of much of the Superfund Site which has not yet begun, and
- do not reflect latest scientific consensus on expected sea level rise due to climate change.

Our comments highlight serious flaws and omissions in the Navy’s review that must be corrected. These flaws include, among others, inadequate consideration of the impact of the radiological fraud on the cleanup and outdated assumptions which will particularly impact the large amounts of hazardous and radioactive waste buried at Parcel E-2; the *Draft Review’s* remedy analysis fails to adequately address rising sea levels due to climate change which threaten San Francisco Bay and its waterfront. The threat that rising Bay levels could inundate portions of the shipyard including Parcel E-2, as well as an inadequate revetment design that will not provide adequate protection from contaminants reaching the Bay are real and must be addressed.

The ROD remedies that are subject to the five-year review must be revised as part of this review process to incorporate the entirely foreseeable effects of significant new information, not available when the RODs were adopted. This includes the impact of the radiological fraud and the substantial and growing threat that Bay-level rise presents to the future integrity of remedies selected years ago.

We have already seen the consequences of the Navy’s failure to anticipate foreseeable risks. In August 2000, local residents observed strange-colored smoke from what appeared to be a fire burning underground in Parcel E-2. This subsurface

fire burned for months, with plumes of smoke readily visible to affected residents, some of whom report adverse respiratory affects. The smoke also affected shipyard workers and the police personnel based there. The Navy failed to properly inform the public about the health risks for the better part of three weeks after the fire broke out.¹⁵ That an underground chemical fire erupted and burned for months in a supposedly stable capped "remedy" highlights the risks to protectiveness from leaving highly toxic waste buried on site.

The Navy must plan for – not underplay – predictable risks such as those posed by global warming, especially at Parcel E-2, where buried contamination is extensive and will continue to be toxic far into the future. If the Navy gets it wrong as a result of its refusal to factor up-to-date science into the five-year review, it could unleash a catastrophe to the public health and the environment. As more and more data on sea-level and Bay-level rise emerges, the Navy must reconsider and conclude that the buried hazardous and radioactive waste at Parcel E_2 needs to be removed from proximity to residents and the rising Bay.

The *Draft Five-Year Review* needs to be redone to incorporate up-to-date science and public health data. Common sense and environmental justice require that remedies be revisited as part of the five-year review and revised remedies must prioritize removal of any and all hazardous and radioactive waste and contamination from the site.

¹⁵ *Navy Owns Up to Monthlong Toxic Fire at Hunters Point*, SFGate, Sept. 11, 2000, <https://www.sfgate.com/bayarea/matier-ross/article/Navy-Owns-Up-to-Monthlong-Toxic-Fire-at-Hunters-2739820.php>

Appendices

Appendix I. Probability that Sea-Level Rise will meet or exceed a particular height (in feet) in San Francisco (State of California Sea-Level Rise Guidance 2018 Update, p. 58)

The chart below displays the chances sea level rise will meet or exceed a certain height by the year listed.

SAN FRANCISCO - High emissions (RCP 8.5)

Probability that sea-level rise will meet or exceed... (excludes H++)										
	1 FT.	2 FT.	3 FT.	4 FT.	5 FT.	6 FT.	7 FT.	8 FT.	9 FT.	10 FT.
2020	0.1%									
2040	3.3%									
2050	31%	0.4%								
2060	65%	3%	0.2%	0.1%						
2070	84%	13%	1.2%	0.2%	0.1%					
2080	93%	34%	5%	0.9%	0.3%	0.1%	0.1%			
2090	96%	55%	14%	3%	0.9%	0.3%	0.2%	0.1%	0.1%	
2100	96%	70%	28%	8%	3%	1%	0.5%	0.3%	0.2%	0.1%
2150	100%	96%	79%	52%	28%	15%	8%	4%	3%	2%

SAN FRANCISCO - Low emissions (RCP 2.6)

Probability that sea-level rise will meet or exceed... (excludes H++)										
	1 FT.	2 FT.	3 FT.	4 FT.	5 FT.	6 FT.	7 FT.	8 FT.	9 FT.	10 FT.
2040	43%	1.4%	0.2%							
2070	62%	4%	0.6%	0.2%						
2080	74%	11%	2%	0.4%	0.2%	0.1%				
2090	80%	20%	3%	1.0%	0.4%	0.2%	0.1%	0.1%		
2100	84%	31%	7%	2%	0.8%	0.4%	0.2%	0.1%	0.1%	
2150	93%	62%	31%	14%	7%	4%	2%	2%	1%	1%

Appendix II. Projected Sea-Level Rise (in feet) for San Francisco (State of California Sea-Level Rise Guidance, p. 57)

The chart below portrays the probabilistic projections for sea-level rise height, along with the H++ scenario (shown in the far right, blue column), as seen in the Rising Seas Report.

Probabilistic Projections (in feet) (based on Kopp et al. 2014)							H++ scenario (Sweet et al. 2017) *Single scenario
	MEDIAN	LIKELY RANGE		1-IN-20 CHANCE	1-IN-100 CHANCE		
	50% probability sea-level rise meets or exceeds...	66% probability sea-level rise is between...		5% probability sea-level rise meets or exceeds...	0.5% probability sea-level rise meets or exceeds...		
				Low Risk Aversion		Medium + High Risk Aversion	Extreme Risk Aversion
High emissions	10.0	0.4	0.3	0.5	0.6	0.8	1.0
	10.40	0.6	0.5	0.8	1.0	1.3	1.8
	10.80	0.9	0.6	1.1	1.4	1.9	2.7
Low emissions	20.0	1.0	0.6	1.3	1.6	2.4	
High emissions	20.40	1.3	0.8	1.5	1.8	2.6	3.9
Low emissions	20.80	1.7	0.8	1.5	1.9	3.1	
High emissions	21.20	1.4	1.0	1.8	2.4	3.5	5.2
Low emissions	21.60	1.3	0.9	1.8	2.3	3.9	
High emissions	22.00	1.7	1.2	2.4	3.0	4.5	6.6
Low emissions	22.40	1.4	1.0	2.1	2.8	4.7	
High emissions	22.80	2.1	1.4	2.9	3.6	5.6	8.3
Low emissions	23.20	1.6	1.0	2.4	3.2	5.7	
High emissions	23.60	2.5	1.6	3.4	4.4	6.9	10.2
Low emissions	24.00	1.7	1.2	2.5	3.4	6.3	
High emissions	24.40	2.6	1.9	3.5	4.5	7.3	11.9
Low emissions	24.80	1.9	1.2	2.8	3.9	7.4	
High emissions	25.20	3	2.2	4.1	5.2	8.6	14.2
Low emissions	25.60	2.1	1.3	3.1	4.4	8.5	
High emissions	26.00	3.3	2.4	4.6	6.0	10.0	16.6
Low emissions	26.40	2.2	1.3	3.4	4.9	9.7	
High emissions	26.80	3.7	2.6	5.2	6.9	11.4	19.1
Low emissions	27.20	2.4	1.3	3.8	5.5	11.0	
High emissions	27.60	4.1	2.8	5.8	7.7	13.0	21.9

Appendix III. San Francisco Sea Level Rise Scenarios (Bay Conservation and Development Commission's Adapting to Rising Tides Bay Area Sea Level Rise Analysis and Mapping Project, Final Report 2017, Pages 13-15)

The first six scenarios (12, 24, 36, 48, 52, and 66 inches of SLR above MHHW) relate directly to the NRC SLR estimates, and they capture a broad range of scenarios between the most-likely scenario and the high end of the uncertainty range at both mid-century and the end of the century:

1. 12-inch SLR = 2050 most-likely SLR scenario
2. 24-inch SLR = 2050 high end of the range; or an existing 5-year extreme tide
3. 36-inch SLR = 2100 most-likely SLR scenario; or an existing 50-year extreme tide
4. 48-inch SLR = 2100 upper 85 percent confidence interval; or 6 inches of SLR plus a 100-year extreme tide
5. 52-inch SLR = 12-inch SLR plus 100-year extreme tide
6. 66-inch SLR = 2100 upper-end SLR scenario; or 24-inch SLR plus 100-year extreme tide

Inundation maps were also created for Bay water level elevations of 77, 84, 96, and 108 inches above MHHW. These levels are above current predictions for SLR likely to occur by 2100, but they are helpful in illustrating short-term flooding that could occur when extreme tides are coupled with SLR:

7. 77 inches above MHHW = 36-inch SLR plus 100-year extreme tide
8. 84 inches above MHHW = 48-inch SLR plus 50-year extreme tide
9. 96 inches above MHHW = 66-inch SLR plus 25-year extreme tide
10. 108 inches above MHHW = 66-inch SLR plus 100-year extreme tide

Sea Level Rise Scenario	Daily Tide	Extreme Tide (Storm Surge)						
	+SLR (in)	1yr	2yr	5yr	10yr	25yr	50yr	100yr
	Water Level above MHHW (in)							
Existing Conditions	0	12	19	23	27	32	36	41
MHHW + 6"	6	18	25	29	33	38	42	47
MHHW + 12"	12	24	31	35	39	44	48	53
MHHW + 18"	18	30	37	41	45	50	54	59
MHHW + 24"	24	36	43	47	51	56	60	65
MHHW + 30"	30	42	49	53	57	62	66	71
MHHW + 36"	36	48	55	59	63	68	72	77
MHHW + 42"	42	54	61	65	69	74	78	83
MHHW + 48"	48	60	67	71	75	80	84	89
MHHW + 52"	52	64	71	75	79	84	88	93
MHHW + 54"	54	66	73	77	81	86	90	95
MHHW + 60"	60	72	79	83	87	92	96	101
MHHW + 66"	66	78	85	89	93	98	102	107

APPENDIX IV

This page intentionally left blank.



DEPARTMENT OF THE NAVY
BASE REALIGNMENT AND CLOSURE
PROGRAM MANAGEMENT OFFICE
33000 NIXIE WAY, BLDG 50 STE 207
SAN DIEGO, CA 92147

5820
Ser BPMP/003
March 15, 2018

The Honorable James Donato
United States District Court
Northern District of California
Federal Building and Courthouse
450 Golden Gate Avenue
San Francisco, California

Dear Judge Donato:

SUBJECT: VICTIM IMPACT STATEMENT IN THE MATTER OF U. S. V. HUBBARD

The Department of the Navy has been designated a crime victim under 18 U.S.C. § 3771 as a result of the fraud committed by Mr. Hubbard, a former employee of Tetra Tech EC Inc. (Tt EC), and others. The Navy contracted Tt EC to prepare planning documents, investigate radiological contamination, conduct remediation, dispose of radioactive waste, and document their activities to support closure of radiologically-impacted sites and buildings at Hunters Point Naval Shipyard (HPNS) from 2003 to 2014. These activities were necessary prior to the Navy turning HPNS over to the City of San Francisco for redevelopment. The fraud committed by Mr. Hubbard and other Tt EC employees has caused not only a substantial financial loss to the Navy, but harm to the Navy's reputation, and it has cost the Navy substantial resources and time. The purpose of this statement is to give the Court a sense of the magnitude of the negative impact of this fraudulent conduct and how it has made the accomplishment of both the Navy's and the City's goals more difficult. Because of the widespread and continuing harm that he has caused the Navy, we ask that you award Mr. Hubbard a substantial sentence.

While the fraud committed by Mr. Hubbard and others has caused the Navy concrete and measurable monetary loss (addressed below), this fraud has also caused significant harm to the Navy that is much more difficult to quantify - but very real. The fraud and uncertainty surrounding Tt EC's work at HPNS has caused a complete loss of trust in the Navy by the local community. The new residents at HPNS are understandably anxious for their safety, and this has required additional effort by the Navy and regulators to address these concerns. The transfer of the property to the City will be delayed by many years, and the Navy has had to address the ire and frustration of the Mayor's Office, the Supervisor's Office, and local Congressional staffs. The redevelopment of HPNS was supposed to revitalize the community and provide jobs and affordable housing; all of that is now on hold indefinitely as the Navy and the regulatory agencies have determined that Tt EC's work is unreliable. The frustrations of these local constituencies have been channeled into a strong activist element which has made the Navy's public meetings tense, aggressive and explosive.

5820
Ser BPMO/003
March 15, 2018

The fraud committed by Mr. Hubbard and others has also led to negative national media attention. The effort to respond to this negative media attention has required increased staffing to answer questions, prepare for interviews, and conduct risk communication training – all of which pulled Navy staff away from their primary duties and caused collateral impacts to other Navy bases and projects.

In addition to responding to the media, correcting misinformation, and responding to the concerns of the public and politicians, the Navy's Base Realignment and Closure (BRAC) Office created a special Review Team to assess the fraud allegations, determine what level of additional site investigation was needed, perform sampling, and then incorporate these findings into a new Work Plan for HPNS. These activities diverted significant numbers of BRAC employees from their normal duties, causing additional disruption to numerous other Navy projects across the country. This diversion of personnel and resources resulted in delays and increased costs for these other projects and resulted in constant stress on the Navy staff over a sustained period of time. The efforts of the Review Team and other similar efforts (including legal and contract dispute efforts, technical re-calculations, political briefings to the City and Congressional delegations, and constant communication up and down the Navy chain of Command), has cost Navy personnel hundreds if not thousands of hours of additional work. The Navy estimates that the fraud committed by Mr. Hubbard and others has set back the planned transfer of HPNS property to the City by an approximate decade. This means not only lost development opportunities for the City and the local community, but continued cost to the Navy to hold and maintain the property.

The fraud has also caused a loss of confidence by the regulatory community (both EPA and California State regulators) regarding the Navy's radiological remediation program and the Navy's competence to implement it. The EPA has expressed to the Navy that they no longer have confidence in the work performed by Tt EC at HPNS, as well as at other Navy radiological sites including those located at Treasure Island and Alameda in the San Francisco Bay Area. The Navy now faces an uphill struggle to rehabilitate itself from this negative connotation in the regulatory community. It will take years to rebuild this credibility.

As I indicated above, the negative fiscal impact to the Navy of the fraud committed by Mr. Hubbard and others at HPNS is consequential, and continues to be assessed. The Navy awarded sixteen contract task orders to address radiological work at HPNS to Tt EC. To date, the Navy has paid Tt EC \$261.8M for work performed at HPNS. Due to the uncovered fraud, all of this work has been called into question and may need to be re-performed. After discovering evidence of Tt EC data falsification/manipulation, and becoming aware of allegations from former Tt EC employees/subcontractors, the Navy hired an independent contractor (Battelle) to provide daily onsite radiological quality assurance for all Navy contractors performing radiological work at HPNS. This cost approximately \$2.2M. The Navy also hired CH2MHill to re-evaluate the work performed and documented by Tt EC at HPNS. CH2MHill reviewed Tt EC's radiological

5820
Scr BP MO/003
March 15, 2018

database for buildings and soil sites for falsification/manipulation using a variety of statistical and logic tests. This analysis provided evidence of previously-undiscovered data falsification and manipulation, which prompted the Navy to begin preparing work plans for an independent analysis of the worksite. The total cost for the database evaluation, work plan preparation, and preliminary field work is approximately \$8.8M. The Navy is currently working with federal and state regulatory agencies to determine the extent of rework that will be necessary at HPNS in order for the Navy to obtain the required "free release" from the regulatory agencies to turn the property over to the City. The EPA has indicated that it would require all work to be re-performed as originally contracted. However, these discussions are not final. The Navy's best estimates for required re-work costs currently range from \$100M to \$300M.

In sum, the Navy has expended \$272.8 M to date paying Tt EC for their work at HPNS, identifying the fraud, and taking measures to prevent further fraud. Depending on the cost of required re-work, this number will certainly rise to \$372.8 M and is likely to rise as high as \$572.8 M. This amount of money would buy a new Littoral Combat ship. It is nearly half of the Navy's total expenditures for *all* environmental clean-up activities at HPNS through fiscal year 2017 (\$991.1 M). This is money that could otherwise have been used by the Navy to train sailors, build ships, purchase aircraft, – in short, to perform the Navy's core mission of fighting the country's wars, deterring aggression, and maintaining the freedom of the seas.

The fraud committed by Mr. Hubbard and others has undermined the taxpayer's trust in the Navy as a good financial steward. Taxpayers trust that the Navy only asks for what it needs, knowing that there are many other important and vital uses for limited funds. The Navy invests an enormous amount of time, energy, and pride in building this trust, and because of that, the military is generally considered one of the most trusted institutions in America. But it only takes the misconduct of a few individuals to erode that essential trust - misconduct like Mr. Hubbard's.

Mr. Hubbard's actions had far-reaching consequences for the United States, its employees, the City of San Francisco, the local residents, and the taxpayers. The Navy therefore respectfully requests that the Court consider a severe sentence for Mr. Hubbard that is commensurate with the adverse impacts of his fraud upon the Navy.

Sincerely,


LAURA DUCHNAK
Director

This page intentionally left blank.

APPENDIX V

This page intentionally left blank.

DECLARATION OF STEVEN J. CASTLEMAN

1. My name is Steven J. Castleman. I am an attorney licensed to practice law in the State of California. Together with my co-counsel, David Anton, I represent Greenaction for Health and Environmental Justice in this action and a Petition seeking to revoke the federal Materials License of Tetra Tech, EC, Inc. (“Tetra Tech”), License number 29-31396-01, issued by Nuclear Regulatory Commission (“NRC”). The Petition is pending before the Executive Director for Operations of the NRC. That Petition (Exhibit 1 to this action), supported by statements under penalty of perjury, demonstrates Tetra Tech engaged in widespread fraud, including reporting fraudulent sampling and scanning data, which has compromised the remediation of radioactive contamination at the Hunters Point Naval Shipyard in San Francisco, California (“Shipyard”).
2. The U.S. Navy hired contractors to review the data reported by Tetra Tech in an attempt to ascertain which, if any, of those data are reliable. One or more of those contractors wrote the reports entitled *Draft Radiological Data Evaluation Findings Report for Parcels B and G Soil*, dated September 2017, which is attached to the Supplemental Filing as Exhibit 1 and *Draft Radiological Data Evaluation Findings Report for Parcels C and E Soil*, dated December 2017, which is attached to the Supplemental Filing as Exhibit 1. It supplements the evidence of fraud and was not known at the time of the filing of the Petition.
3. On January 12, 2018, I had a telephone conversation with Dr. Kathryn A. Higley, a Professor and Head of the School of Nuclear Science and Engineering in the College of

Engineering at Oregon State University. She has been hired by the U.S. Navy to act as a Community Technical Liaison for the radiation cleanup at the Shipyard.

4. During our phone conversation, Dr. Higley told me that the Navy has concluded, after data reviews including the one represented by Exhibit 1, that virtually all of the data reported by Tetra Tech is suspect. Later in our conversation she qualified what she said, saying a substantial but undefined proportion of Tetra Tech's data was "to a large extent useless." She also informed me that substantial re-sampling and re-scanning will be required to determine the full impact of Tetra Tech's fraud on the cleanup and the planning process for that project is currently under way.
5. On January 31, 2018, I attended a Community Open House meeting hosted by the Navy concerning the Hunters Point Shipyard radiological cleanup. Prior to the meeting I had a conversation with Derek Robinson, of the Navy's Base Realignment and Closure Program Management Office West ("BRAC PMO West"). He is the person in charge of the cleanup of the shipyard on behalf of the Navy. During our conversation, Mr. Robinson confirmed what Dr. Higley told me; the Navy had lost confidence in the Tetra Tech data. Mr. Robinson also said that the Navy was going to treat all Tetra Tech's data as unreliable and resample all locations where Tetra Tech did radiological work.
6. I declare under penalty of perjury that the foregoing is true and correct.



Steven J. Castleman
Attorney at Law

June 26, 2018

Date

APPENDIX VI

This page intentionally left blank.

Steven Castleman

From: Steven Castleman
Sent: Tuesday, January 30, 2018 4:26 PM
To: 'Robinson, Derek J CIV NAVFAC HQ, BRAC PMO'
Cc: David Anton; 'Bradley Angel'; brian@greenaction.org
Subject: List of Witnesses/Meeting Request
Attachments: Witness list for Navy-2.pdf

Mr. Robinson,

Attached is the list of potential witnesses to the Tetra Tech fraud who should be interviewed.

The descriptions of what they know are based on information developed from other witnesses; they are not meant to limit the subject matter of interviews, but rather to act as a starting point for inquiry. Trained, professional investigators should be hired who will seek to learn all the witnesses know about Tetra Tech's fraudulent activities and who will follow up on any additional leads that result from such interviews.

I will await your response to our meeting request.

See you tomorrow evening.

Sincerely,

Steve Castleman

From: Robinson, Derek J CIV NAVFAC HQ, BRAC PMO [<mailto:derek.j.robinson1@navy.mil>]
Sent: Tuesday, January 30, 2018 8:06 AM
To: Steven Castleman
Subject: RE: Meeting Request/List of Witnesses

Dear Mr. Castleman,

I will not be able to meet this week, but have been discussing your request internally and should have a response by early next week.

Thank you for your patience.

Best Regards,

Derek J. Robinson, PE
BRAC Environmental Coordinator
Navy BRAC PMO West
33000 Nixie Way; Bldg 50
San Diego CA 92147
Desk Phone: 619-524-6026

-----Original Message-----

From: Steven Castleman [<mailto:scastleman@ggu.edu>]
Sent: Monday, January 29, 2018 11:54 AM
To: Robinson, Derek J CIV NAVFAC HQ, BRAC PMO
Subject: [Non-DoD Source] Meeting Request/List of Witnesses

Mr. Robinson,

I told you I would get you a list by last Friday of percipient witnesses that should be interviewed in the Tetra Tech case. Unfortunately, It that will have to be delayed until later this afternoon or tomorrow because I have gotten tied up on other pressing matters. I apologize for the delay.

On a different subject, are you able to meet this Thursday or Friday? If not, can we schedule a meeting that fits with your calendar?

Thank you.

Steve Castleman

Visiting Associate Professor & Staff Attorney

Environmental Law and Justice Clinic

415-442-6675 | scastleman@ggu.edu <<mailto:scastleman@ggu.edu>>

GGU Law Logo - Email

Facebook Logo <<http://www.facebook.com/ggulaw>> Instagram Logo <<http://www.instagram.com/ggulaw>>
LinkedIn Logo <<https://www.linkedin.com/edu/golden-gate-university-school-of-law-17859>> Twitter Logo
<<http://www.twitter.com/ggulaw>> Youtube Logo <<http://www.youtube.com/goldengatelaw>>

WARNING: This E-mail, and any attachments, are covered by the Electronic Communications Privacy Act, 18 U.S.C. §2510-2521. This email may contain confidential and legally privileged information. The contents of this e-mail, and any attachments, are intended solely for the use of the person or entity to whom the e-mail was addressed. This email may also contain information that may be protected by the attorney-client privilege, work-product doctrine, or other privileges, and may be restricted from disclosure by applicable Federal and

State laws. If you are not the intended recipient of this email you are advised that any dissemination, distribution, or use of the contents of this message is strictly prohibited. If you received this e-mail message in error, please contact the sender by reply e-mail or phone. Please also permanently delete all copies of the original e-mail and any attachments.

Steven Castleman

From: Steven Castleman
Sent: Friday, February 16, 2018 1:08 PM
To: 'Robinson, Derek J CIV NAVFAC HQ, BRAC PMO'
Cc: 'Bradley Angel'; brian@greenaction.org; David Anton; 'Fairbanks, Brianna'; 'lee.lily@epa.gov'
Subject: Additional Witnesses
Attachments: 2.16.18.ltr.robinson.pdf

Dear Mr. Robinson,

Attached please find a letter to you supplementing the witness list I sent you on January 30, 2018. It contains 5 additional names, all of whom worked in the on-site laboratory and whom we have reason to believe have personal knowledge of improper sample and data manipulation.

The letter also seeks a response to our August 2017 request for a meeting with you.

Steve Castleman

Visiting Associate Professor & Staff Attorney
Environmental Law and Justice Clinic
415-442-6675 | scastleman@ggu.edu



APPENDIX VII

This page intentionally left blank.

RADIOLOGICAL SURVEY REPORT

NWTS #: Par A M/H Bkg Brick 012804

Page 1 of 1

DATE:	January 28, 2004	INSTRUMENTATION USED								
TIME:	0800 hours	MODEL	S/N	EFF. %	BKRD	CAL. DUE DATE				
SURVEYOR:	Bert Bowers	Ludlum: 19	101733	N/A	5-10 μ R/hr	October 1, 2004				
LOCATION:	Manhole, Par A (brick)	Ludlum: 2350-1	82955	N/A	10,514 CPM	August 21, 2004				
REVIEWED BY:	Daryl DeLong	Ludlum: 2360	178154	α 12% β 6%	2 CPM 255 CPM	October 13, 2004				
μ R dose rates = μ R/hr; α , β & γ survey results = CPM										
PURPOSE OF SURVEY: <u>Establish background reference area/levels (from non-impacted M/H location) similar to M/H's to be accessed for pneumatic plug installation (i/s sanitary sewer system).</u>						Survey Results				
<p>Parcel A Manhole: Brick Lined</p> <p>● = discrete surveillance point</p> <p>Remarks: <u>Composite sample collected from w/i manhole trench</u></p>						#	α	β	γ	μ R
						1	2	317	15996	5
						2	4	349	15549	5
						3	4	325	16502	7
						4	3	419	16022	6
						5	4	348	15858	6
						6	2	365	15758	6
						7	2	300	16384	6
						8	0	378	16304	7
						9	1	335	15635	5
						10	2	334	18530	10
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a
						n/a	n/a	n/a	n/a	n/a

New World Technology FORM NWT-001



Gamma Spectroscopy Results

Sample results given in (pCi/g)

NWT Field Report

Ufo ID	Sample Description			
2N000031	Parcel A - 01(concrete) 259g 1/28/04 8:40			
Dry Weight (g)	Time Counted (s)	Operator	Date Acquired	Time Acquired
259	2699.1	Paul Wall	02-Feb-04	11:59:35 AM
Library Path	Reviewed By:		Date Sampled	Time Sampled
Hunter's Point 1.Lib			28-Jan-04	8:40:00 AM

Nuclide	Net Activity	MDA	Uncertainty	Soil DCGL
AC-228	7.1877E-01	2.2938E-01	4.9014E-01	*NA
AM-241	*<MDA	1.9088E-01	**	7.8000E+00
BI-212	*<MDA	6.0497E-01	**	*NA
BI-214	3.3371E-01	1.6542E-01	2.2379E-01	*NA
CO-60	1.9866E-02	1.5430E-02	3.4409E-02	4.2000E-01
Cs-137	*<MDA	9.6968E-02	**	1.3000E-01
EU-152	2.8179E-01 *F	1.2557E-01	2.2543E-01	1.3000E-01
EU-154	1.0062E-01	9.2507E-02	8.6375E-02	2.3000E-01
K-40	6.3481E+00	1.5329E+00	2.7700E+00	*NA
PA-234	*<MDA	1.1496E-01	**	*NA
PB-212	2.8228E-01	1.1802E-01	2.4798E-01	*NA
PB-214	5.1734E-01	1.6069E-01	3.2927E-01	*NA
RA-226	2.9653E+00	1.2805E+00	3.3784E+00	2.0000E+00
Th-230	2.2995E+01	1.3831E+01	4.9315E+01	*NA
Th-232	1.2421E+01	2.0385E+01	**	*NA
TH-234	1.1117E+00	1.8065E+00	**	*NA
TI-208	*<MDA	5.4340E-02	**	*NA
U-235	5.9660E-01 #F	3.4542E-01	9.9026E-01	5.7000E-01

*F=Failed energy identification fraction and key energy tests demonstrating non-existence of the nuclide

#F = All energy peaks determining this isotope had bad poisson shape; this distortion signifies non-existence of the radionuclide

*<DCGL=Nuclide failed key line energy and shape tests and is determined not to be present in sample

*<MDA = Activity for this Nuclide is less than the Minimum Detectable Activity (MDA)

** = Activity for this Nuclide is less than the MDA, therefore no Uncertainty is necessary

*NA = No DCGL available for this Nuclide

Monday, March 15, 2004



Gamma Spectroscopy Results

Sample results given in (pCi/g)

NWT Field Report

Ufo ID	Sample Description			
2N000030	Parcel A - 02 259g 1/28/04 8:35			
Dry Weight (g)	Time Counted (s)	Operator	Date Acquired	Time Acquired
259	2698.88	Paul Wall	02-Feb-04	10:58:20 AM
Library Path	Reviewed By:		Date Sampled	Time Sampled
Hunter's Point 1.Lib			09-Feb-04	8:30:00 AM

Nuclide	Net Activity	MDA	Uncertainty	Soil DCGL
AC-228	*<MDA	4.5302E-01	**	*NA
AM-241	6.0949E-02	2.1121E-01	**	7.8000E+00
BI-212	1.0652E+00	6.4706E-01	1.0652E+00	*NA
BI-214	8.6659E-01	1.7318E-01	4.8374E-01	*NA
CO-60	2.6491E-03	1.5431E-02	**	4.2000E-01
Cs-137	*<MDA	1.0565E-01	**	1.3000E-01
EU-152	1.9823E-01 *F	1.4611E-01	2.3041E-01	1.3000E-01
EU-154	1.3078E-01	9.7271E-02	2.6244E-01	2.3000E-01
K-40	1.2301E+01	1.5329E+00	3.3491E+00	*NA
PA-234	3.4336E-01	2.3155E-01	5.9886E-01	*NA
PB-212	1.1345E+00	1.4311E-01	3.1889E-01	*NA
PB-214	1.1768E+00	1.5021E-01	4.4135E-01	*NA
RA-226	3.1165E+00	1.4884E+00	4.0652E+00	2.0000E+00
Th-230	*<MDA	1.2723E+01	**	*NA
Th-232	2.6165E+01	2.4733E+01	4.5565E+01	*NA
TH-234	*<MDA	1.8332E+00	**	*NA
TI-208	*<MDA	7.7685E-02	**	*NA
U-235	6.1342E-01 #F	3.5179E-01	9.7145E-01	5.7000E-01

*F=Failed energy identification fraction and key energy tests demonstrating non-existence of the nuclide

#F = All energy peaks determining this isotope had bad poisson shape; this distortion signifies non-existence of the radionuclide

*<DCGL=Nuclide failed key line energy and shape tests and is determined not to be present in sample

*<MDA = Activity for this Nuclide is less than the Minimum Detectable Activity (MDA)

** = Activity for this Nuclide is less than the MDA, therefore no Uncertainty is necessary

*NA = No DCGL available for this Nuclide

Monday, March 15, 2004

This page intentionally left blank.



May 7, 2024

To: U.S. Navy

Delivered via email to **Michael Pound, BRAC Environmental Coordinator**

Cc: HPNS_FYR_Comments@us.navy.mil

Re: Hunters Point Naval Shipyard Fifth Five Year Review Report

Dear Mr. Pound:

The Surfrider Foundation is a grassroots environmental nonprofit organization dedicated to the protection and enjoyment of the world's ocean, waves and beaches for all people. On behalf of Surfrider Foundation's San Francisco Chapter and our 1,117 chapter members, as well as 3 other Surfrider chapters in the Bay Area, we submit the following comments detailing our concerns around the Hunters Point Naval Shipyard (HPNS) cleanup efforts. Surfrider has reviewed the latest Five Year Review Report, in particular the Climate Resilience Assessment (CRA), and has determined that the Sea Level Rise Vulnerability Assessment (SLRVA) is wholly inadequate and does not take advantage of best science currently being applied as standard to California coastal development projects. We are very concerned that the implications to public health may be dramatically underestimated as a result. Surfrider details our concerns below.

Sea Level Rise is Not Properly Considered

The SLRVA provides an unreliable and unrealistic estimate of future sea level rise for the following reasons:

- Does not use the best available science as presented in the State of California's 2024 Sea Level Rise Guidance Document. The SLRVA should immediately adjust to referencing the updated document.
- Does not consider sea level rise over the lifetime of development and remediation projects that will be based on the findings of this assessment. The SLRVA should consider SLR through 2100.
- Does not consider numerous combined climate impacts and local environmental factors that affect the impact of sea level rise on flooding and groundwater rise. The assessment must include an evaluation of the combined impacts of projected wave runup, storm surge, rainfall, and erosion.

- Does not discuss local environmental factors such as tidal flux and land subsistence. Both should be considered due to the enormous potential influence they could reasonably be expected to have on this site.
- Relies on the assumed perpetuated existence of a seawall to determine future flood risks. This is not best practice in California. Vulnerability should be assessed assuming the seawall doesn't exist (and may fail.)

Any development being considered in coastal California in light of climate change is expected to include the key considerations listed above. The fact that they are missing from an SLRVA adjacent to San Francisco Bay — which is hydrologically complex and subject to relatively significant impacts caused by climate change — is unacceptable. It is nothing short of alarming that these variables are missing from a SLRVA that will directly influence how a community already overburdened with pollution will plan for potential toxic waste mobilization in their neighborhood.

The SLRVA does not incorporate the best available science regarding future SLR estimates. The HPNS CRA used the SLR projections of 1.0 feet and 3.2 feet for the years 2035 and 2065, respectively, to predict the upper limit of the range of SLR scenarios evaluated. These projections were based on the 2018 Update of the State of California Sea Level Rise Guidance Document. Since then, there have been significant advancements in scientific understanding and ability to project future sea level rise. The Ocean Protection Council's newly updated 2024 Sea Level Rise Guidance Document represents best available sea level rise science in California and should be the referenced document.¹ We note that while the latest guidance document projects a lower amount of sea level rise by 2050 (1 foot of sea level rise by 2050) this is not representative of an overall trend towards lower-than-expected rates of sea level rise. Rather, acceleration of rates is likely to happen closer towards the end of the century — which is still well within the lifetime of development considerations that will be made in relation to this assessment.

Additionally, the SLRVA only predicts SLR at 2035 and 2065. These timeframes do not adequately address the timeframes that the proposed development will endure. Any structure built today must be assessed for at least a fifty-year lifespan, and more realistically at least 70 years. The lifetime of the development should be considered in part because sea level rise is expected to increase sharply after 2050: The 2024 Sea Level Rise Guidance document estimates 6 feet around 2100. As sea level rise quickly accelerates, opportunities to adapt or 'deal with it' will become dramatically limited. It is important to plan realistically for the future now in order to facilitate phased adaptation opportunities over time.

The SLRVA also does not appear to model for any combined climate impacts due to wave runup, storm surge, rainfall, erosion, or other potential variables that are known to dramatically increase the impacts of flooding and groundwater rise related to sea level rise. Recent research² studying combined climate impacts in coastal California shows that waves are getting bigger, which intensifies the impact of wave runup on flooding and intrusion into the

¹ State of California Sea Level Rise Guidance: 2024 Science and Policy Update

² [Bromirski, Peter D, Climate-Induced Decadal Ocean Wave Height Variability From Microseisms: 1931–2021](#)

groundwater table. This is a potentially significant variable at BVHP due to the exposure of the Bay to aggressive Pacific swells. Studies also show that California's atmospheric rivers, which in recent years have brought several inches of rainfall per year to the Bay Area, are also getting more intense, which will bring more rainfall to BVHP in a shorter amount of time³. In parts of BVHP, groundwater mixed with toxic contaminants sits only one foot from the soil surface, and large rain events could have a dramatic impact on whether and how quickly the water table (and the toxic waste within it) reaches the surface. Proper analysis of these combined climate risks and their interaction with sea level rise would undoubtedly affect the anticipated location and amount of flooding that can be expected in Bayview Hunters Point.

The SLRVA also fails to discuss basic environmental factors, such as tidal flux and land subsistence, which are known to affect flood risk in California. Tidal influxes in the Bay Area are some of the most dramatic in coastal California — tidal influxes alone can be responsible for 9 feet of lateral shift in the tide line. Land subsistence should also be discussed as part of this SLRVA given that much of the area in BVHP sits on top of infill that would be dramatically upset by subsistence.

Finally, it is not appropriate to base any SLRVA off the assumed existence and functioning of a seawall. The SLRVA should assess the impacts of SLR without a seawall in order to understand the actual risks of SLR in the area, which is important for general considerations and also should the seawall fail due to a catastrophic event (earthquakes, tsunamis, floods, or fires and explosions).

Groundwater Rise Assessment is not Adequate

Surfrider is gravely concerned with how sea-level and groundwater rise will affect shallow groundwater and soil contamination in the parcels. We fear that rising groundwater threatens to damage the future infrastructure of the Shipyard and expose future residents to hazardous substances. We also have grave concerns about impacts to surrounding bay ecosystems and wildlife should these toxic substances be released. We consider a thorough groundwater rise analysis of paramount importance to mitigating these risks.

Surfrider has major concerns with the methodologies used to predict groundwater rise. Models of coastal groundwater and contaminant movement should be constructed as a synthesis that includes tidal effects on a range of geochemical conditions, interactions with urban infrastructure or heterogeneous fill materials, and contaminant movement.⁴ **The Navy's groundwater rise assessment is instead based only on calibrating the current groundwater table to projected SLR and does not include the synthesis of contaminant movement with impacts of intensifying storms expected with climate change.** This likely results in an under-reporting of realistic impacts and potentially inaccurate assumptions about where toxic waste may be

³ Gershunov, A., Shulgina, T., Clemesha, R.E.S. *et al.* Precipitation regime change in Western North America: The role of Atmospheric Rivers. *Sci Rep* 9, 9944 (2019). <https://doi.org/10.1038/s41598-019-46169-w>

⁴ Hill et al., *Earth's Future* (2023)

mobilized. This is particularly worrisome given that many of the proposed remedies are extremely site specific.

Surfrider is also concerned that the Navy's assessment does not adequately incorporate the effects of heavy rainfall. In addition to a gradual rise in baseline groundwater, heavy rains could cause drastic increases in groundwater levels.⁵ Soil saturation also reduces the ability of the soil to absorb rainwater, which can lead to flooding and liquefaction risk. At a minimum the Navy should conduct more frequent sampling at its monitoring wells, particularly after storms, to better assess groundwater rise and/or find another way to incorporate the impact of more intensifying storms on the rise of the groundwater table.

The Climate Resilience Assessment estimates that groundwater emergence from SLR may occur within Parcel E by the year 2065 (Appendix A). This estimate does not appear to take into consideration the combined impacts due to rainfall, wave runup, storm surge, erosion, tidal flux or other potential variables that could increase SLR. **The Navy's SLR assessment must include rainfall impacts on groundwater elevation as well as tidal and other marine influences, and consider erosion and inundation impacts from rising tributary water levels during storm events.** Surfrider requests a more robust assessment that takes into account these variables, not just for Parcel E but for all sites.

As recommended in the San Francisco Civil Grand Jury Report (2022), Surfrider asks that the **Navy create detailed maps of the groundwater surface at the Shipyard site under different sea-level rise scenarios, including combined impacts due to wave runup, storm surge, erosion, tidal flux or other potential variables that could increase SLR.** The maps should take into account planned changes to the site, such as shoreline structures and the addition of clean soil, and carefully map projected groundwater flows and the locations of known contaminants.

Independent Study is Needed

The Navy is recommending a site-specific study at Parcel E to assess whether the projected climate change vulnerabilities are likely to result in additional CERCLA risk. There are no further details regarding who would perform the study. **The Surfrider Foundation agrees with the Grand Jury recommendation that the Navy make water level data available to expert, independent scientists.** The Navy should commission a detailed, professional study similar to that conducted by the City of Alameda.⁶ Experts should have access to the groundwater monitoring wells to extract local groundwater data from multiple sources to create a detailed map of the groundwater surface under the wettest, most flood-prone current conditions. Based on this data, the study should involve rigorous modeling to predict how that groundwater surface would rise under a progressively more severe set of sea-level rise scenarios. The timeframe for the

⁵ May et al, Shallow Groundwater Response to Sea-Level Rise: Alameda, Marin, San Francisco, and San Mateo Counties. Pathways Climate Institute and San Francisco Estuary Institute.

⁶ City of Alameda, "The Response of the Shallow Groundwater Layer and Contaminants to Sea Level Rise," 2020

modeling data should extend out to the end of the century. The study should evaluate future risks posed by groundwater flooding in known areas of contaminated soil.

Remedy Design is not Adequate

Capping of waste near communities threatened by rising sea levels and rising groundwater is not an adequate solution. Given the deficiencies in the SLRVA, we harbor major concerns about capping as a leading component of the remedy design as capping is not inherently designed to withstand exaggerated groundwater rise. We similarly question the capabilities of the seawall, slurry walls and freshwater and tidal wetlands proposed to make the remedy design resilient through the year 2065 because those remedies may be dramatically weakened by higher (and likely more realistic) flood scenarios than the CRA currently plans for. Even without more accurate sea level and groundwater rise modeling, the CRA identifies potential problems with the proposed remedies as soon as 2035. The CRA identified the following potential pitfalls that may be attributable to climate change:

- In 2035, limited impact from permanent groundwater emergence is projected to occur in Parcel D-1 (Figure 3-1 and Table 2-2).
- In 2065, limited impacts from permanent groundwater emergence are projected to occur in Installation Restoration (IR) Sites 7 and 18 (IR 7/18), Parcels B-1 and B-2, C, D-1, E and E-2 (Figure 3-2 and Table 2-2).

The HPNS CRA also identified the following potential vulnerabilities resulting from other impacts previously identified:

- In 2035, a potential vulnerability to human receptors from permanent groundwater emergence at Parcel D-1.
- In 2065, potential vulnerability to human receptors at the current ground surface from heavy metals due to groundwater emergence at IR 7/18, Parcels B-1, B-2, C, D-1, and E.
- In 2065, potential vulnerability to San Francisco Bay receptors from heavy metals due to groundwater emergence at IR 7/18, Parcels B-1, B-2, C, D-1, and E.

In addition, we also note that the mobilization of Volatile Organic Compounds (VOC) is a risk unstudied in the CRA. As Dr. Kristina Hill notes in *Earth's Future* (2023), VOCs can penetrate underground utility trenches and sewer pipes — which is a legitimate risk in BVHP. This represents a contamination ‘mobilization pathway’ that could have dramatic public health implications. This risk is exacerbated when water intrudes on sewage and stormwater infrastructure — a reasonable risk to anticipate with groundwater and sea level rise.

The CRA findings in addition to others that Surfrider and community members are identifying indicate the need for enhanced cleanup as well as reconsideration of whether these parcels should be developed for people to actually live in. A more equitable vision for BVHP may be to set

aside more areas for wetland and native plant restoration and allow for bioremediation, including phytoremediation, to address the toxic substances over time. Given the reality of SLR and groundwater rise, much of this area appears to be unsuitable to permanent infrastructure. Indeed, many local governments are now recognizing the need to relocate coastal infrastructure inland to allow space for the dynamic shoreline to calibrate to sea level rise.

A better future for HPNS may be to showcase how polluted sites can be cleaned up and restored in a way that allows nature to help mitigate the impacts of rising seas. Based on some feedback from the community that Surfrider is aware of, we support a full and equitable cleanup that also:

- Avoids open-trucking contaminated soil through neighborhoods.
- Avoids relocation of toxic waste to other disproportionately burdened communities.
- Evaluates and employs emerging technologies to better address the soil and water toxicity. A high temperature electrothermal process should be evaluated as a safe and affordable technology.
- Establishes a local toxics cleanup facility to treat soil onsite.

Conclusion

Surfrider appreciates the Navy embarking on a CRA at Bayview Hunters Point. We are very concerned about the outstanding public health risks that stem from toxic contamination mobilized by groundwater rise. We therefore strongly encourage the Navy to strengthen its SLRVA to at least mimic standard sea level rise vulnerability analyses in California, and to adjust its perspective on available remedies accordingly. We hope to support the Navy and community-based organizations who have long been exposed to and working on this issue towards a science-based and ethical assessment of sea level rise vulnerabilities in the area.

Sincerely,

Nina Atkind
San Francisco Chapter Manager
Surfrider Foundation

Elizabeth M. Taylor, Esq.
Of Counsel
Surfrider Foundation

Laura Walsh
California Policy Manager
Surfrider Foundation

Date: March 18,2024

Michael Pound
BRAC Environmental Coordinator
33000 Nixie Way, Bldg. 50
San Diego, CA 92147

Re: **Response to Hunters Point Naval Shipyard Five Year Review**

Dear Mr. Pound:

The Navy's Fifth Five-Year Review related to Hunters Point Naval Shipyard (HPNS) does not detail sufficient remediation and real assurances that the area surrounding Hunters Point Naval Shipyard will ever be safe for human occupation. It is *not* safe for current and future residents of Bayview/Hunters Point or for the entirety of the Bay Area as the radioactive particulate matter from the Shipyard spreads through the windy San Francisco Bay Area air and other toxins seep into the soil and leech into the groundwater and migrate into the San Francisco Bay.

The Fifth Five-Year Review plan begins by stating that its objective is to evaluate the selected remedies at these sites and parcels and determine whether the remedies **remain protective** of human health and the environment in accordance with the requirements set forth in each of the [Records of Decision] (ROD).” This statement implies that the remedies are already protective and it is just a matter of ensuring they *remain* so. This is a false representation of the status of the toxic contamination. Your recommendations from this report, as stated on page xviii are as follows:

Radiological objects (ROs) were identified during excavation and remediation of soil in areas that were not considered radiologically impacted. There is a high degree of confidence that discrete ROs were removed to a depth of 2 feet below ground surface (bgs). However, there is a potential for ROs to be present in material below 2 feet bgs where shoreline expansion has occurred since 1946.

Your recommendation is to “Evaluate additional remedies to address the potential presence of ROs in material 2 feet bgs and prepare the appropriate post-ROD documentation.”

This is vague and unspecific, leaving the community with no way to measure the extent of the danger or the progress of any remediation. Your report then gives a nod to climate change and the effects of rising water; yet your plan is just to put a “durable cover” over the toxic sites and put in protective fencing. You say in the future you will build a sea wall and monitor the landfill gas. Your report speaks to the need to continually check these “durable asphalt covers” for cracks and shifting. The Navy's plan does not state that it will do this monitoring *in perpetuity* to ensure immediate remediation when these durable covers start cracking and shifting, exposing the toxic materials. The same assurances are not given for “repairing” the

foundations of buildings with the goal of sealing the foundations so the toxic soil will not be exposed. This review does not address what happens when there is an earthquake or even less dramatic events that shift the buildings on their foundations. The Navy must be responsible in perpetuity to fix it.

Moreover, after publishing in the newspaper and in mailouts you sent to the residents of Bayview/Hunters Point that the public inspection and comment period would run until **April 7, 2024**, you changed the deadline online at your site to March 31, 2024, which cuts an entire week off the comment period. Please correct your date online so that it is consistent with the mailers.

As the San Francisco Civil Grand Jury reported in July 2022, the coming impacts of climate change will release heavy metals and other contaminants inland and into the Bay, and within our lifetimes, the blight, which the dwindling community that once made up the workers and their families in the Bayview has long warned us about, will spread to the rest of the Bay. Simply putting a cover on it when you are not digging down far enough to remove the tainted soil and the radioactive objects buried within it, putting up a fence warning the rising water to stay out and building a sea wall are insufficient. The Navy's assessment of future concerns from rising groundwater makes clear that below the Navy's "protective covering," they are leaving heavy metals, such as mercury and zinc. When coupled with the concerns regarding ongoing maintenance to ensure no cracking or leaking of these covers or breaches in a landfill cover, **the Navy must remove the heavy metals**, not just cover them over.

The report also states that the Navy and the EPA have identified certain Per- and Polyfluoroalkyl (PFAS) compounds as emerging chemicals of environmental concern on the parcels and that the Navy is in the *process of implementing corrective actions*. Yet, there will not be another report for five years. The presence of PFAS could not have been a surprise to the Navy, given the presence of PFAS on military bases nationwide. This is additional toxic exposure for the population. The PFAS compounds must be removed from these parcels. The community in Bayview Hunters Point has long dealt with deadly cancers, chronic illness, reduced quality of life and a shorter life span than surrounding residents of San Francisco. The rest of the residents of San Francisco and the Bay Area are also being placed in harm's way.

San Francisco voters overwhelmingly passed (over 86%) Proposition P over 20 years ago to ensure ***that the U.S. Navy cleaned up the HPNS to the highest standards***; yet that is not even mentioned in your report. Your clean-up efforts have not even come close to those standards.

The Navy declared Parcel A properly cleaned up; yet Strontium-90, a known causative agent for bone cancer, and other radionuclide and chemical toxins (many carcinogenic) continue to surface in soil and groundwater testing. Strontium 90 and these other toxins must be removed from Parcel A.

The report claims the objectives for remediation of Parcel B are being met, but the Navy won't actually finish even the retesting until 2025 and the report begins by identifying the area as posing "Unacceptable risk to industrial workers from exposure to metals and [semi-volatile organic compounds (SVOCs)]," let alone not being cleaned up to residential standards. The idea

of developing this area *at all* for residential use is unacceptable. The same can be said for Parcels C and D.

For Parcel G the report calls for complete radiological retesting.

The Navy hired Tetra Tech to clean up Hunters Point. Yet, in 2018 two Tetra Tech supervisors pleaded guilty to falsifying records of soil samples, showing it was NOT cleaned up, and they went to prison. The Navy sued Tetra Tech for return of monies it had paid them, but the Navy did not then pursue another full-scale plan for clean up as evidenced by this report.

I demand that all Parcels be cleaned up to the highest standards and that there be no land transfers or development until Proposition P is fully implemented.

Sincerely,

This page intentionally left blank.



Gray Panthers of San Francisco
Public Comment Navy's 5th Five-Year Review
April 28, 2024

Background: Twenty-four years ago, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use. In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site. And in Dec 2023, GreenAction noticed Navy with intent to sue for retesting.

Gray Panthers of San Francisco support SF voters and the Bayview Hunters Point Community, advocating for 100% cleanup, not capping of radioactive and toxic waste, and 100% retesting of Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable, delaying cleanup progress and worsening community health effects. For immediate action we demand:

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

5th 5-Year Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (with our answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not Protective: Protectiveness Statements for site parcels relying on incomplete data are deemed invalid. Parcels should not be considered protective until work is complete and validated.

Back to the Drawing Board: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No Gardening Allowed: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There's no guarantee soil won't be disturbed by future activity.

Submitted by:

Ann Colichidas, BVHP Activism Leader on behalf of the Gray Panthers Board

This page intentionally left blank.

From:**Sent:** Tuesday, June 11, 2024 12:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Cleanup of Bayview Hunters Point Superfund Site

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

My name is _____ and I am a member of 350 Bay Area, an organization committed to pushing towards a healthier climate for the future.

I am writing to call for the complete cleanup, not capping, of the radioactive waste at the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the most possible extent. We cannot wait for the next Five Year Review to take meaningful action as we are nearing the point of no return of climate change, it needs to happen now.

For the health of our communities and environmental justice,

Sincerely,

From:**Sent:** Wednesday, March 13, 2024 3:06 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Cc:** greenaction@greenaction.org <greenaction@greenaction.org>**Subject:** [Non-DoD Source] Cleanup of hazardous contamination at the Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

Bayview resident

From:**Sent:** Wednesday, May 8, 2024 10:24 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Comment re. Hunters Point Naval Shipyard Clean Up

I hereby submit this comment in re "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)".

Background:

In 2000, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use.

In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site.

Comment

I support the SF voters and the Bayview Hunters Point Community in advocating **100% cleanup (not capping)** of radioactive and toxic waste, and **100% retesting** to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable. This failure has delayed the cleanup's progress and worsened community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

Current (5th 5-Year) Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (my answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not protective: Protectiveness Statements for site parcels relying on incomplete data are not valid. Parcels should not be considered protective until work is complete and validated.

Ignores climate change: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No gardening is safe: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There is no guarantee that soil won't be disturbed by future activity.

From:

Sent: Tuesday, June 11, 2024 12:37 PM

To: guzman.martha@epa.gov <guzman.martha@epa.gov>; HPNS FYR Comments
<hpns_fyr_comments@us.navy.mil>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>;
Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>

Subject: [Non-DoD Source] Demand a Full Cleanup of Bayview Hunters Point Superfund Site!

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Tuesday, May 7, 2024 11:47 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Full cleanup not capping of Hunter's Point Naval Shipyard Superfund site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

Thank you,

From:**Sent:** Tuesday, June 11, 2024 12:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup of Bayview Hunters Point Superfund Site Needed!

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. I am a third Generation Bay Area Resident and the health and safety burden that the Bayview Hunters Point community has suffered for decades due to the inadequate cleanup process at this site is frankly, appalling. I've talked to so many people who have shared that their family members are sick from living there, and that not enough is being done.

Climate change is rapidly affecting our world, and we need to be realistic about the impact it will have on our communities if we do not swiftly address these issues. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

--

[350 Bay Area](#) & [350 Bay Area Action](#)

Take Climate Action! [Join our monthly meetings](#) [Make a donation](#)

From:**Sent:** Sunday, March 17, 2024 12:50 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

Sincerely,

San Francisco Resident

From:**Sent:** Thursday, March 14, 2024 10:07 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site.

Failing to do a complete cleanup only furthers the historical environmental racism against the historically Black community. To this day, buildings and even schools in the area are cordoned off because of the **toxic** and hazardous conditions.

Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

Thank you,
(member of West Side Tenants Association)

From:**Sent:** Thursday, March 14, 2024 8:32 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. See [Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup](#)

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Friday, March 15, 2024 1:19 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

San Francisco, CA 94114

From:**Sent:** Sunday, March 17, 2024 2:11 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point (<https://www.sfchronicle.com/sf/article/s-f-hunters-point-shipyard-toxic-water-cleanup-18762183.php>).

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action; it needs to happen now.

For the health of our communities and environmental justice,

San Francisco

From:**Sent:** Wednesday, March 13, 2024 3:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am a San Francisco resident writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Friday, March 15, 2024 10:53 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Hunters Point Naval Shipyard clean-up

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

San Francisco neighbor

From:**Sent:** Friday, March 15, 2024 9:57 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Saturday, March 16, 2024 4:11 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

Our neighbors in The Bayview Hunters Point community deserves to be free from environmental racism, including exposure to toxic and radioactive contamination.

For the health of our communities and environmental justice,

San Francisco, California

From:**Sent:** Monday, March 18, 2024 8:43 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

Best,

From:**Sent:** Friday, March 15, 2024 8:38 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to **reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup** to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

longtime resident of San Francisco

From:**Sent:** Wednesday, March 13, 2024 10:23 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Cc:** Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible (as San Francisco voters passed overwhelmingly in the year 2000). We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Tuesday, June 11, 2024 12:47 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; meredith.williams@dtsc.ca.gov <meredith.williams@dtsc.ca.gov>; yana.gracia@calepa.ca.gov <yana.gracia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Regarding Full cleanup of Bayview Hunters point superfund site.

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I hope you are all having a great week.

While we are enjoying our week, our fellow humans at Hunters Point Naval Shipyard are suffering with negative health impacts, I felt disheartening learning about all the impacts.

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice.

Thanks,

From:**Sent:** Sunday, March 17, 2024 1:46 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Urgent: Hunters Point Naval Shipyard Superfund clean up

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,
Regards,

From:**Sent:** Tuesday, June 11, 2024 12:32 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Concern

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,



From:**Sent:** Tuesday, June 11, 2024 12:38 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; meredith.williams@dtsc.ca.gov <meredith.williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Hunters Point Cleanup

I am writing to call for the complete cleanup - and not capping - of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for generations due to inaction and inadequate cleanup at the site. Capping contamination does not protect against the reality of climate change - namely that rising groundwater is causing toxic materials to surface leading to toxic exposure for habitants in the area.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action. It must happen now.

I appreciate your time and attention to this important matter!

From: Ahimsa Porter Sumchai MD<ahimsaportersumchaimd@hunterspointcommunitybiomonitoring.net>**Sent:** Saturday, February 24, 2024 1:54 PM

To: info sfhpns.com <info@sfhpns.com>; Admin HPS CAC <info@hpscac.com>; Grant Colfax <grant.colfax@sfdph.org>; Susan.Philip@sfdph.org; Health commission <healthcommission.dph@sfdph.org>; Keith Seidel <keith.seidel@sfdph.org>; MayorLondonBreed@sfgov.org; Shamann Walton <Shamann.Walton@sfgov.org>; Aaron.Peskin@sfgov.org; board Of supervisors <boardofsupervisors@sfgov.org>; Tomas@CDPH Aragon <Tomas.Aragon@cdph.ca.gov>; susan.fanelli@cdph.ca.gov; biomonitoring@OEHHA biomonitoring <biomonitoring.biomonitoring@oehha.ca.gov>; Meredith Williams <Meredith.Williams@dtsc.ca.gov>; michael.j.pound.civ@us.nav.mil; michael.howley@dtsc.ca.gov; Wayne Praskins <Praskins.Wayne@epa.gov>; John Chesnutt <Chesnutt.John@epa.gov>; Michael Regan <regan.michael@epa.gov>; CityAttorney <cityattorney@sfcityatty.org>; districtattorney@sfgov.org; Gavin Newsom <Gavin.Newsom@gov.ca.gov>

Cc:**Subject:** Not Protective! Findings of the HPNS 5th Five Year Review - for publication**Importance:** High[Download full resolution images](#)[Available until Mar 25, 2024](#)[Click to Download](#)Findings HPNS 5th Five Year Review - Not Protective.pdf
19.8 MB

From:**Sent:** Friday, May 3, 2024 11:46 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Public comment on the US Navy's 5th Five-Year Review of Bay View Hunters Point Contamination remediation (Dr. Teresa Palmer)

I am hearby submitting my public comment (below) on the following document: "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)".

As a physician and long time San Franciscan I am shocked and angry that the clean up of Bay View Hunters Point has been dragged out for so many decades. The cost in sickness and in death, which is ongoing, to our community members has been and is being largely ignored.

I support San Francisco voters and the Bayview Hunters Point Community in advocating for 100% cleanup (not capping) of radioactive and toxic waste, and 100% retesting to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable, thus delaying the cleanup's progress and worsening community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

5th 5-Year Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (with answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not Protective: Protectiveness Statements for site parcels relying on incomplete data are deemed invalid. Parcels should not be considered protective until work is complete and validated.

Back to the Drawing Board: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No Gardening Allowed: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There's no guarantee soil won't be disturbed by future activity.

Thankyou:

Family Medicine/Geriatrics

From:**Sent:** Friday, May 3, 2024 11:07 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Cc:** SF Gray Panthers Board <sf-gray-panthers-board@googlegroups.com>; graypanther-sf <graypanther-sf@sonic.net>**Subject:** [Non-DoD Source] Public comment on the US Navy's 5th Five-Year Review of Bay View Hunters Point Contamination remediation (from SF Gray Panthers Board member)

Board member of Gray Panthers of San Francisco, Public Comment on Navy's 5th Five-Year Review of Bay View Hunters Point Contamination remediation; Submitted on May 3, 2024 (Deadline for public comments: May 7, 2024):

I am hereby submitting my public comment (below) on the following document: "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)".

My public comment is:

Background: Twenty-four years ago, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use. In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site.

I and the Gray Panthers of San Francisco support the SF voters and the Bayview Hunters Point Community in advocating for 100% cleanup (not capping) of radioactive and toxic waste, and 100% retesting to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable, thus delaying the cleanup's progress and worsening community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

5th 5-Year Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (with answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not Protective: Protectiveness Statements for site parcels relying on incomplete data are deemed invalid. Parcels should not be considered protective until work is complete and validated.

Back to the Drawing Board: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No Gardening Allowed: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There's no guarantee soil won't be disturbed by future activity.

Thank you very much for accepting and putting my public comment above into the public record. (And I want to thank fellow SF Gray Panther Board member Ann Colichidas for her leadership as our SF Gray Panthers' "Environmental Racism" activism leader, whose research has informed my public comment, above).

-Sincerely, SF Gray Panthers Board member

From:**Sent:** Sunday, March 24, 2024 2:04 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup," as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five-Year Review to take meaningful action; it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Tuesday, March 19, 2024 6:14 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

Thank you,

From:**Sent:** Thursday, March 21, 2024 11:01 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

As a retired nurse I have also been concerned about the effects of the environment on people's health. I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

https://www.sfchronicle.com/sf/article/s-f-hunters-point-shipyard-toxic-water-cleanup-18762183.php?link_id=2&can_id=aa9c7a1018f06fe1822ed5044f8b5868&source=email-curbside-charging-shipyard-cleanup-solar-energy&email_referrer=email_2244616&email_subject=curbside-charging-shipyard-cleanup-solar-energy

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:

>

Sent: Monday, March 18, 2024 9:47 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Monday, March 18, 2024 3:12 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

As a high schooler whose friends frequently go urban exploring in the polluted areas of Hunter's Point, I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site.

The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site, and I'm concerned for the health of the many high schoolers that go exploring there. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please **read the [SF Chronicle article](#)** titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

High School Senior | San Francisco, cA

From:**Sent:** Thursday, March 21, 2024 2:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear Mr. Michael Pound (US Navy):

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. As an underserved, the Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

San Francisco, CA 94121

From:**Sent:** Sunday, May 5, 2024 11:45 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] re "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023

I hereby submit this comment in re "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)".

Background:

In 2000, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use.

In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site.

Comment

I support the **SF** voters and the Bayview Hunters Point Community in advocating **100% cleanup (not capping)** of radioactive and toxic waste, and **100% retesting** to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable. This failure has delayed the cleanup's progress and worsened community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

Current (5th 5-Year) Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (my answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not protective: Protectiveness Statements for site parcels relying on incomplete data are not valid. Parcels should not be considered protective until work is complete and validated.

Ignores climate change: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No gardening is safe: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There is no guarantee that soil won't be disturbed by future activity.

Environmental engineer and sf resident

From:**Sent:** Friday, March 15, 2024 9:52 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

San Francisco, CA 94121

From:**Sent:** Thursday, March 21, 2024 2:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear Mr. Michael Pound (US Navy):

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. As an underserved, the Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

San Francisco, CA 94121

From:**Sent:** Sunday, May 5, 2024 9:50 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] 100% cleanup (not capping) in Bayview Hunters Point

I support the SF voters and the Bayview Hunters Point Community in advocating **100% cleanup (not capping)** of radioactive and toxic waste, and **100% retesting** to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable. This failure has delayed the cleanup's progress and worsened community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

Current (5th 5-Year) Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. Not protective: Protectiveness Statements for site parcels relying on incomplete data are not valid. Parcels should not be considered protective until work is complete and validated.

Ignores climate change: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No gardening is safe: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There is no guarantee that soil won't be disturbed by future activity.

Sincerely,

San Francisco

From:**Sent:** Wednesday, May 1, 2024 7:50 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Hunter's Point Superfund Site Comment

To Whom It May Concern,

The Navy's clean up efforts at the Hunter's Point Superfund Site has not been effective in protecting residents and workers from hazardous substances. Rates of cancer and asthma in Hunter's Point exceed other areas of the city. The threat of future sea level rise will only make the effects of toxic substances worse in the coming years.

The Navy needs to execute and expedite a thorough clean up to the most stringent standards. This neglected area of the city needs to be toxin free for its residents! This travesty would not be tolerated in other parts of the city.

San Francisco

From:**Sent:** Sunday, May 5, 2024 5:04 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Comment re: 5th Five-Year Review of Bay View Hunters Point Contamination remediation

With regard to "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)" this comment is hereby submitted.

Background:

In 2000, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use.

In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site.

Comment

I support San Francisco voters (Proposition P, 2000, demanding remediation to highest EPA standard for unrestricted use) and the Bayview Hunters Point Community in advocating **100% cleanup (not capping)** of radioactive and toxic waste, and **100% retesting** to replace Tetra Tech's fraudulent work. In reviewing a large part of the contamination site, EPA found most Tetra Tech soil samples unreliable. Indeed, deliberate falsification by Tetra Tech has been confirmed. Failure to address this falsification has delayed the cleanup's progress and worsened community health effects.

Dust Curtains: Immediate installation of industrial-grade dust barriers along the A-2 and E-2 western fenceline is required to reduce community exposure to airborne matter.

Full Disclosure: Potential buyers of homes in the area must be provided with full disclosure of the site status, history and cleanup goals.

Current (5th 5-Year) Review Draft: The review raises more questions than it answers, despite nearly \$1.5 billion spent to date.

The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has caused criticism for failure to address the project's ineffectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. My answers (in **BOLD**) reflect my view that the draft needs revision.

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not protective: Protectiveness Statements for site parcels relying on incomplete data are not valid. Parcels should not be considered protective until work is complete and validated.

Ignores climate change: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No gardening is safe: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There is no guarantee that soil won't be disturbed by future activity.

From:

Sent: Thursday, April 18, 2024 6:21 PM

To: HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>

Subject: [Non-DoD Source] Re: Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

April 17, 2024

Dear Mr. Michael Pound,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. This has been an issue for far too long. Please don't wait until investors come in to gentrify the place for people of privilege to move in. All our residents deserve a healthy, clean place to call home.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Wednesday, April 17, 2024 7:00 AM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup, NOT CAPPING, of Hunters Point Naval Shipyard Superfund Site

Dear US EPA, US Navy, CalEPA, and DTSC,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up. Please read the SF Chronicle article titled, "Toxic groundwater, sea level rise latest challenges in long-running S.F. shipyard cleanup" as it highlights this point.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Thursday, March 28, 2024 1:45 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Cc:****Subject:** [Non-DoD Source] San Francisco Civil Grand Jury Findings and Recommendation from 2021-2022

The City of San Francisco Civil Grand Jury is a government oversight panel of volunteers who serve for one year. It makes findings and recommendations based on its investigations. Here is the link to the entire report:

[Buried Problems and a Buried Process: The Hunters Point Naval Shipyard in a Time of Climate Change.](#)

The Hunters Point Naval Shipyard is a Superfund site on the southeastern shore of San Francisco. The Navy, overseen by EPA and state regulators, has been cleaning up radiological and chemical contamination in the Shipyard for over thirty years. As the cleanup is completed and approved, the Navy has agreed to transfer the property to the City in stages to create San Francisco's biggest housing development. A developer, working with the San Francisco Office of Community Infrastructure and Investment, plans to build thousands of homes at the Shipyard, along with office towers, parks, a school and millions of feet of commercial space. The Civil Grand Jury began this investigation with a question about the potential impact of groundwater rise due to climate change on the future of the Shipyard. Over the past decade, new coastal adaptation science has emerged to show the ways shallow groundwater reacts to sea level rise. In brief, as the sea level rises, shallow groundwater near the shore rises with it, and can cause flooding, damage infrastructure, and mobilize any contaminants in the soil. The Jury asked if rising groundwater could pose special risks to health and safety in the low-lying, heavily polluted landscape of the Shipyard. The Jury learned that experts believe the Shipyard's soil and topography make it very likely that shallow groundwater there will be strongly affected by sea level rise. **The Jury further found that rising groundwater in the Shipyard could interact in dangerous ways with future infrastructure, and with hazardous toxins the Navy plans to leave buried in the soil. We wanted to know if this new science and these risks had been taken into account by the City, by OCII, or by the Navy and its regulators. We found that they had not.** To address this lack of information, the Jury recommends that the City hire expert scientists to examine these risks in detail. The City of Alameda set an example with a recent study predicting how shallow groundwater on the island would react to sea level rise, and how rising groundwater might interact with contaminants at different sites. The Jury recommends that San Francisco, acting through the Office of Resilience and Capital Planning, commission a similar independent study specific to the Shipyard, so that future development plans can be informed by a thorough, professional analysis of rising groundwater there. The Jury also wished to issue recommendations about how such a groundwater study might help improve the Shipyard cleanup. But the Jury cannot issue recommendations to the Navy or to the EPA and state regulators, and so looked for a solution that could come from inside the City. The Jury discovered that the process that governs the cleanup is forbiddingly complex, and essentially invisible within the City. Yet the stakes for San Francisco in that process—for health, The Hunters Point Naval Shipyard in a Time of Climate Change 3 for environmental safety, and for the resilience of future development in the Shipyard—are enormous. But hardly anyone in the City is paying attention. Within the City, expertise about the Superfund process that governs the cleanup exists only in the San Francisco Department of Public Health's Hunters Point Shipyard Program, a program that until recently had only one employee. Several other departments in the City have familiarity with the science of groundwater rise and might have flagged the risks to the Shipyard, but these departments are unfamiliar with the cleanup and the

Superfund process, and do not communicate with SFDPH about the Shipyard. This leaves the City poorly prepared to address emerging issues such as groundwater rise at the Shipyard—or any other risks the Navy and its regulators may overlook. There is no mechanism in place to discover such issues, to develop a response, or to follow through with the Navy and regulators to a resolution. The Jury recommends that the Board of Supervisors create, without delay, a permanent Hunters Point Shipyard Cleanup Oversight Committee, made up of representatives from City departments with pertinent expertise. This committee should proactively look out for the City's best interests in the cleanup. It should perform general due diligence, and communicate the City's concerns to the Navy and regulators ahead of major decision-making about the cleanup. To address the opacity of the Superfund governance process, the Jury recommends that SFDPH create all necessary explanatory materials to support the work of the Shipyard Cleanup Oversight Committee. To ensure that the Committee is informed about key cleanup decision points with enough time to weigh in, the Jury recommends that a representative of SFDPH appear before the Committee frequently for briefing. Finally, to return to where this report started, the Jury recommends that the Cleanup Oversight Committee review the results of the recommended groundwater rise study, determine what it means for the future of the Shipyard, and respectfully but assertively share the City's position with the Navy, EPA, and state regulators. The intersection of rising ground water and buried contaminants poses a credible risk to human health and well-being. Given the rapidity with which the climate is changing, the City needs to take immediate and sustained action to protect its residents.

These are the SF Grand Jury Findings and Recommendations:

FINDINGS AND RECOMMENDATIONS

Findings

F1: In the Hunters Point Shipyard, shallow groundwater rising with sea level rise and residual hazardous substances pose serious but poorly understood risks that should concern the City and County of San Francisco, the Navy, future developers, future property owners, and future residents.

F2: The Federal Facility Agreement signatories have neglected to investigate how groundwater rise may lessen the effectiveness of the Navy's cleanup at the Hunters Point Shipyard Superfund site.

F3: The process governing the cleanup at the Shipyard encompasses decisions and value judgments that matter to all San Franciscans, but the extremely technical nature of the process inhibits City leaders and citizens alike from understanding it, or even knowing what is at stake.

F4: Despite the enormous stakes of the process governing the Shipyard cleanup, there is little understanding of the process throughout the City, or even that the City can influence this process.

F5: The City and County of San Francisco is poorly prepared to discover new information pertinent to the Shipyard cleanup, to proactively look for risks and problems overlooked or under-prioritized by the Federal Facility Agreement signatories, or to develop responses to new information or problems..

F6: No proactive mechanism exists for the City and County of San Francisco to articulate its interests and concerns about the cleanup for the Federal Facility Agreement signatories, nor does a mechanism exist for the City to monitor progress towards obtaining satisfactory responses to such interests and concerns from the signatories.

Recommendations

R1: By September 1st, 2022, the Mayor and/or the City Administrator should direct the Office of Resilience and Capital Planning, in collaboration with the Department of Public Health, to commission and manage an independent, third-party study of Hunters Point Shipyard to predict the future shallow groundwater surface, groundwater flows, and potential interactions of groundwater with hazardous materials and planned modifications to the site under multiple sea level rise scenarios. (F1) The Hunters Point Naval Shipyard in a Time of Climate Change 37

R2: The Mayor and the Board of Supervisors should collaborate to provide funding for the study recommended in R1, in the Fiscal Year 22-23 budget, or by October 1st, 2022. (F1) R3: By October 1st, 2022, the Board of Supervisors should pass an ordinance to create a permanent Hunters Point Shipyard Cleanup Oversight Committee that includes the Controller or their designee, relevant technical experts from the Public Utilities Commission and the Department of Public Works, and representatives from other relevant City departments, to perform due diligence on behalf of the City and County of San Francisco into the Federal Facility Agreement signatories' decision-making, and to prepare an agenda of questions and requests to be communicated to the signatories by the Department of Public Health in advance of major cleanup document releases. (

F4, F5, F6) R4: By October 1st, 2022, the Mayor should direct the Department of Public Health to support the Cleanup Oversight Committee in its due diligence function by providing explanatory materials and briefings about cleanup governance documents and the discourse among Federal Facility Agreement signatories, as well as additional materials at the request of the Committee. (F3)

R5: By October 1st, 2022, the Mayor and the Board of Supervisors should collaborate to ensure that funding is available to generate the material specified in R4, in the Fiscal Year 22-23 budget or by October 1st, 2022, and in future budgets. (F3)

R6: From October 1st, 2022 and going forward, whenever there are outstanding questions and requests to the Federal Facility Agreement signatories, and especially during the lead-up to major cleanup document releases, a member of the management chain overseeing the Hunters Point Shipyard Program in the Department of Public Health should appear before the Shipyard Cleanup Oversight Committee at regular intervals to report on discussions with the Federal Facility Agreement signatories. (F6)

R7: By March 1st, 2023, the Hunters Point Shipyard Cleanup Oversight Committee should prepare a report on its recommended requests for the Federal Facility Agreement signatories based on the groundwater study recommended in R1, and deliver that report to the Board of Supervisors, the Mayor, and the Department of Public Health.

Please submit these comments, findings and recommendations into the public record.
Thank you,

Member of the SF Civil Grand Jury 2021-2022

From:**Sent:** Tuesday, March 26, 2024 5:29 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith Williams <meredith.williams@dtsc.ca.gov>; Yana Garcia <yana.garcia@calepa.ca.gov>; Martha Guzman <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] A Full Cleanup at the BVHP Superfund Site Is the Only Ethical Course of Action

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am writing to urge for the thorough remediation, rather than simply capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point neighborhood has endured adverse health effects for many years due to the inadequate cleanup efforts at this location. It has been demonstrated through research that capping the contamination does not adequately safeguard against the toxic materials being moved from the bottom up by rising groundwater.

I implore your agencies to refrain from implementing capping measures at the Hunters Point Naval Shipyard and instead commit to a comprehensive cleanup to the greatest extent possible. We cannot afford to delay meaningful action until the next Five Year Review; action must be taken now.

This is imperative for the well-being of our communities and for the cause of environmental justice.

Thanks,

From:**Sent:** Tuesday, March 26, 2024 5:32 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup of Bayview Hunters Point Superfund Site

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am _____, a third-year Advertising and Design at the University of San Francisco. I am from Richmond, Virginia, and I have enjoyed my time living in the Bay Area these last three years. I love San Francisco for its rich natural beauty in areas like the Presidio and its strong sense of community and togetherness. These reasons lead me to why I am writing this email to you today:

I am calling for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The BVHP community has experienced immense negative health impacts for years due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown. Rising sea levels and other climate change impacts will likely surface the buried toxic materials at BVHP.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our local communities and environmental justice,

From:**Sent:** Tuesday, March 26, 2024 5:55 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Demanding a Comprehensive Cleanup of Bayview Hunters Point Superfund Site

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

Can you imagine your home being unsafe to live in? The residents of Bayview Hunters Point live this reality by facing the threat of toxic water due to a failure of responsible action. Consequently, I am writing to call for the complete cleanup — not capping — of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has already and will continue to suffer negative health impacts for decades because of the inadequate cleanup process at this site. Capping contamination fails to protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

From:**Sent:** Tuesday, March 26, 2024 5:29 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith.Williams@dtsc.ca.gov <Meredith.Williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] Full Cleanup of Bayview Hunters Point Shipyard

Dear US EPA, US Navy, CalEPA and Department of Toxic Substances Control,

I am a resident of San Francisco writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Site. The Bayview Hunters Point community has long called for a complete cleanup due to suffering negative health impacts from the contaminated shipyard site, and it is well past time to take effective action for the sake of human health. Thus far, the cleanup process at the site has been inadequate and has continued to leave residents facing dangerous conditions. Capping the site will not protect against rising groundwater's mobilization of hazardous materials from the bottom up, as research has shown. Please do not let this be another instance where the concerns of the Bayview Hunters Point community are passed over and dangerous conditions are allowed to persist.

We are calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We (and the Bayview Hunters Point community) do not deserve to wait for the next Five Year Review for meaningful action to take place. It needs to happen now, and you have the opportunity to make a difference.

Sincerely,

Class of 2021

From:

Sent: Tuesday, March 26, 2024 5:26 PM

To: HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; Meredith Williams <meredith.williams@dtsc.ca.gov>; Yana Garcia <yana.garcia@calepa.ca.gov>; Martha Guzman <guzman.martha@epa.gov>

Subject: [Non-DoD Source] End Shipyard Contamination in Bayview Hunters Point

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

10th Grade

From:**Sent:** Tuesday, March 26, 2024 5:25 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>; meredith.williams@dtsc.ca.gov <meredith.williams@dtsc.ca.gov>; yana.garcia@calepa.ca.gov <yana.garcia@calepa.ca.gov>; guzman.martha@epa.gov <guzman.martha@epa.gov>**Subject:** [Non-DoD Source] A swiftie says hi

Dear US EPA, US Navy, CalEPA, and Department of Toxic Substance Control,

I'm a huge Swiftie, fantasy reader, and religious voter. And I DEMAND that you clean up, NOT COVER UP the Hunters Point Naval Shipyard Superfund Site.

I am writing to call for the complete cleanup, not capping, of the Hunters Point Naval Shipyard Superfund Site. The Bayview Hunters Point community has suffered negative health impacts for decades due to the inadequate cleanup process at this site. Capping contamination does not protect against rising groundwater's dangerous mobilization of hazardous materials from the bottom up, as research has shown.

I am calling on your agencies to reject capping at the Hunters Point Naval Shipyard and follow through with a complete cleanup to the extent humanly possible. We cannot wait for the next Five Year Review to take meaningful action, it needs to happen now.

For the health of our communities and environmental justice,

Best,

From:**Sent:** Monday, March 18, 2024 2:36 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>;**Subject:** [Non-DoD Source] Building 123 Demolition, and Reclamation Schedule

Dear BRAC Environmental Committee,

Thank you for communicating with us regarding the upcoming project to dismantle Building 123, and undertake toxic soil reclamation, etc.

I am a long-term tenant on Parcel B, and have concerns, and a thought, concerning the order in which these operations can take place.

Simply put:

Why not leave the wood-framed structure in place, wrap the building with protective sheeting, and perform all the concrete slab demolition, and toxic soil reclamation BEFORE tearing down the building?

This would hold in all the dust until AFTER the ground has been excavated, and re-covered, preventing massive amounts dust from blowing around the base, and the surrounding Bayview neighborhood.

It is clear, even without the recent. extremely high winds gusts, that dust blows all around frequently.

Tenting the structure, and closing-in the excavation operations makes perfect sense. It would cut down noise as well.

Thank you for considering this idea. Please forward this to the appropriate project management team for their review. Who knows, this approach may already be under consideration by your team.

We hope that such a plan will be adopted, for the benefit of us all.

Best,

From:**Sent:** Wednesday, May 8, 2024 3:15 PM**To:** HPNS FYR Comments <hpns_fyr_comments@us.navy.mil>**Subject:** [Non-DoD Source] Navy's 5 year review of the contamination in the Bay View Hunters Point neighborhood

To the US Navy,

I hereby submit this comment in re "Naval Facilities Engineering Systems Command Southwest BRAC PMO West San Diego, California Draft Fifth Five-Year Review Report Hunters Point Naval Shipyard San Francisco, California November 2023; Contract Number: N62470-21-D-0007; Contract Task Order No. N6247322F4930, July 2024; (This report documents the Fifth Five-Year Review for the Hunters Point Naval Shipyard that includes Installation Restoration (IR) Sites 7 and 18, and Parcels B-1, B-2, C, D-1, D-2, E, E-2, G, UC-1, UC-2, and UC-3 as required by the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in accordance with CERCLA § 121(c), as amended, and the National Oil and Hazardous Substances Pollution Contingency Plan, Part 300.430(f)(4)(ii) of the Code of Federal Regulations)".

Background:

In 2000, San Francisco voters passed Proposition P, demanding that the shipyard be cleaned to the highest EPA standard for unrestricted use.

In 2022, the San Francisco Grand Jury highlighted concerns about sea level rise spreading contaminants beyond the Hunters Point Superfund site.

Comment

I support the SF voters and the Bayview Hunters Point Community in advocating **100% cleanup (not capping)** of radioactive and toxic waste, and **100% retesting** to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable. This failure has delayed the cleanup's progress and worsened community health effects.

Dust Curtains: Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.

Full Disclosure: Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.

Current (5th 5-Year) Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (my answers in **BOLD**)

1. Is the remedy functioning as intended? **UNKNOWN**
2. Are the original exposure assumptions and cleanup levels still valid? **NO**
3. Has any new information emerged that could question the protectiveness of the remedy? **YES**

Not protective: Protectiveness Statements for site parcels relying on incomplete data are not valid. Parcels should not be considered protective until work is complete and validated.

Ignores climate change: The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.

No gardening is safe: Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There is no guarantee that soil won't be disturbed by future activity.

Sincerely,

Oakland, CA 94611

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

Response to Comments		Contract/CTO N62470-21-D-0007; Contract Task Order No. N6247322F4930		Responses By Navy	
Comment By Public	Code/Organization Public			Date April 2024	
Project Title and Location					Type of Review
Draft Fifth Five-Year Review Report, Hunters Point Naval Shipyard, San Francisco, California, November 2023					X
					Draft
					Final
					Other

No.	Public Comments Dated March, April, and May 2024	Navy Response
1	<p>Parcel Division and Cleanup Oversight Concern: Although dividing the site into parcels enables focused cleanup operations, this strategy may inadvertently lead to gaps in managing cross-parcel contamination risks and achieving a comprehensive ecosystem restoration. The potential for contaminants to migrate between parcels due to factors like water flow, air transport, and human activities poses a challenge to the isolated parcel approach. Moreover, the current strategy may not fully account for the interconnectedness of the ecosystem, potentially overlooking opportunities for holistic environmental recovery.</p> <p>To enhance the effectiveness of the remediation efforts at HPNS, there is a pressing need for a more cohesive strategy that bridges the gaps between individual parcel cleanup efforts. A concerted effort to understand and mitigate cross-parcel contamination risks is imperative. This would involve detailed mapping of contamination flow paths, robust monitoring systems to track the movement of pollutants across parcel boundaries, and collaborative remediation plans that address the site's environmental challenges in a unified manner. Furthermore, adopting an ecosystem-based approach to restoration could offer a more comprehensive solution, one that not only focuses on removing contaminants but also on restoring the natural habitat and biodiversity of the area. Such an approach would acknowledge the interdependence of soil, water, and biological resources across the site, aiming for a restoration outcome that revitalizes the entire HPNS ecosystem. This shift towards integrated management and ecosystem-based restoration strategies would not only address the immediate concerns of contamination and environmental degradation but also pave the way for a sustainable future for HPNS, turning it into a model for large-scale environmental remediation projects.</p>	<p>The Navy agrees with a sustainable approach to environmental remediation and understands the community concerns with regard to dividing HPNS into parcels to better help focus environmental cleanup activities.</p> <p>To address the potential for contamination originating from one parcel to impact other nearby parcels, the Navy's robust groundwater monitoring system at HPNS includes over 200 monitoring wells managed under the Basewide Groundwater Monitoring Program (BGMP) that has mapped the A and B aquifers that run under the property. Per the BGMP, groundwater is sampled, and results are analyzed, providing information on individual parcels and across HPNS. The CRA does mention that one of the impacts of sea level rise is groundwater table rise. As part of the planning for site specific studies, the Navy plans to discuss with the agencies additional studies to evaluate any changes in groundwater flow patterns and any consequent implications for cross-parcel impacts.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
2	<p>Strengthening Radiological Safety and Expanding Climate Resilience</p> <p>The proactive stance towards radiological safety and climate resilience within the Hunters Point Naval Shipyard (HPNS) remediation efforts marks a significant advancement in addressing long- term environmental and health risks. Setting explicit timelines for the retesting of radiological conditions signifies a commitment to thoroughness and transparency, ensuring public trust in the remediation process. Similarly, incorporating climate change projections into the planning stages reflects an acknowledgment of the evolving nature of environmental risks and the need for adaptive remediation strategies.</p> <p>The identification of Radiological Objects (ROs) raises questions about the initial assessment of radiological hazards and suggests that these risks may have been underestimated. This discovery highlights the complexity of radiological contamination and the challenges in predicting its full extent. Concurrently, while the initiatives for climate resilience are commendable, they currently offer a narrow focus on specific climate change effects, potentially overlooking broader ecological and environmental impacts that could influence the site's remediation effectiveness in the long term.</p> <p>Addressing these concerns necessitates a multifaceted approach. For radiological safety, it is imperative to refine assessment protocols to encompass a broader spectrum of potential hazards, including those that may not have been fully considered in previous evaluations. This involves not only a thorough re-examination of known contaminated areas but also a proactive search for previously unidentified radiological hazards, using advanced detection technologies and methodologies. Enhancing the radiological assessment framework will ensure a more accurate understanding of the site's conditions, enabling the formulation of comprehensive remediation strategies.</p> <p>Regarding climate resilience, expanding the scope of planning to cover a wider array of climate impact scenarios is essential. This expansion should include considerations of how different climate change outcomes, such as increased precipitation, temperature fluctuations, and extreme weather events, could interact with the site's specific environmental and contamination dynamics. Integrating these broader climate projections into the remediation planning process will allow for the development of more robust and flexible strategies, capable of adapting to a range of future conditions.</p> <p>Strengthening the site's resilience to climate change not only protects the progress of the remediation efforts but also ensures the long-term safety and health of the surrounding community and ecosystem.</p>	<p>The Navy understands the communities concern with regard to both radiological testing and cleanup and climate impacts. The radiological program is a robust program that uses instruments and methods standard within the industry for identifying and removing radiological contamination. The Navy cleanup approach is scientific, methodical, and comprehensive and follows established federal and state guidance. The Navy conducts extensive testing and review of data before making decisions, and an independent third-party quality assurance contractor oversees all fieldwork and reviews chain-of-custody. In addition to reviewing all Navy work plans and report, the regulatory agencies also conduct independent sampling to confirm Navy results. In addition, a radiological health and safety expert is available to the Navy and members of the community to review results, answer questions, and address concerns. With regard to the discovery of radiological objects, the Navy shares information and updates as soon as practicable with members of the community at meetings and in fact sheets which can be found on the Navy website at Former Naval Shipyard Hunters Point (navy.mil).</p> <p>The Navy has considered climate impacts such as rising sea levels in the development of their remedy designs for several years. The Navy conducted a climate resilience assessment (CRA) as part of this Five-Year Review document and is committed to discussing follow-on site-specific studies with the agencies. The basewide CRA is an initial screening tool used to identify areas which may be impacted first or most severely by the impacts of climate change. The Navy will discuss with the regulatory agencies additional more in-depth climate change modeling following the finalized of the Five-Year Review and will consider potential impacts to HPNS remedies and remaining onsite contaminants as a result of various climate-related hazards. As the site-specific plans are developed, this information will be shared with the community at regulatory scheduled Mayor's Hunters Point Shipyard Citizens Advisory Committee (HPSCAC) meetings and/or via information factsheets posted on the Navy 's website.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
3	<p>Enhancing Community Engagement and Clarity in Protectiveness Statements</p> <p>The efforts towards robust community engagement and the provision of detailed protectiveness statements for each parcel at Hunters Point Naval Shipyard (HPNS) significantly contribute to the transparency and integrity of the remediation process. These actions are fundamental in building and maintaining trust with the Bayview community, providing residents with a clear understanding of the safety and environmental health of their surroundings. The detailed protectiveness statements serve as a crucial communication tool, offering insights into the current state and effectiveness of the remediation measures in place.</p> <p>While the report outlines commendable steps towards community engagement and clarity in the remediation's effectiveness, there remains a gap in facilitating deeper, more meaningful community participation in the remediation oversight and decision-making processes. The current engagement strategies may not fully capture the breadth of community concerns or allow for their substantive influence on remedial planning and execution. This gap highlights a missed opportunity for leveraging community insights and fostering a collaborative remediation effort.</p> <p>Addressing this concern necessitates the establishment of a community advisory board that is integrally involved in the remediation process. This board should comprise diverse community representatives, including residents, local business owners, environmental activists, and public health experts, ensuring a broad spectrum of perspectives and concerns are represented. By playing an active role in reviewing and providing feedback on remediation plans, progress reports, and protectiveness statements, the community advisory board would ensure that the voices of those most affected by the site's environmental issues are not just heard but are influential in shaping remediation efforts. Such a board would act as a bridge between the Navy, remediation teams, and the community, enhancing the transparency, accountability, and responsiveness of the cleanup process. It would also serve to validate the remediation's progress and effectiveness from a community perspective, thereby strengthening public trust and cooperation in achieving a safe and healthy environment for Bayview residents.</p>	<p>The Navy appreciates and welcomes community interest in the environmental cleanup at HPNS. The Navy takes a proactive role in community outreach activities, including presentations every other month to the Mayor's Hunters Point Shipyard Citizens Advisory Committee (HPSCAC) which is a forum for the community to hear about technical topics, schedule updates, and give them opportunities to engage with the Navy representatives directly. In addition, the Navy does quarterly presentations to homeowners and residents of the San Francisco Shipyard community on former Parcel A property, development of a variety of factsheets on technical topics, bus tours to present technical information through hands-on demonstrations and photo tours to capture images of the former shipyard, presentations at identified community group meetings and events, a formal community comment period on the Fifth Five-Year Review, individual and small group discussions with stakeholders, and focus group discussions with community members to gather insights and feedback on how the Navy can best communicate with the community regarding the ongoing environmental cleanup at HPNS. The Navy sends electronic newsletters to about 1,300 subscribed email addresses, and offers an information line in English, Spanish, and Chinese that is broadly advertised in Navy outreach materials. Technical documents are available for public review on the Navy's website and at local Information Repositories when available for public comment. In addition, the Navy has conducted community surveys at least every two years since 2010 to understand the best ways to share information with members of the community and gather current issues, concerns, and interests.</p> <p>Members of the community are encouraged to participate in HPSCAC meetings, events, site tours, and surveys to learn more, ask questions, and share feedback. The local community is also invited to reach out to the Navy directly via email BRAC Environmental Coordinator, the information hotline (415-295-4742) or general email account (info@sfhpns.com). In addition, the public is encouraged to review Navy documents in the same capacity as a restoration advisory board (RAB). The comprehensive approach to community participation in Hunters Point neighborhoods has resulted in increased opportunities for public participation and exceeds outreach activities outlined in the DoD's Restoration Advisory Board guidelines.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
4	<p>Advancing Sustainability in Redevelopment Efforts</p> <p>The transition of various parcels at Hunters Point Naval Shipyard (HPNS) towards the completion of their remediation phases brings into focus the opportunity for sustainable redevelopment. This pivotal phase represents not just an endpoint for cleanup efforts but the beginning of a transformative journey towards a rejuvenated and sustainable landscape. The emphasis on embedding sustainability principles within the redevelopment plans is commendable, indicating a holistic vision that extends beyond remediation to include the future vitality and resilience of the community and environment.</p> <p>While the strategic intent to incorporate sustainability into the redevelopment of HPNS is clear, there is a noticeable gap in the explicit detailing of these sustainability principles within the planning documents. Specifically, there's a need for greater clarity on the integration of green infrastructure, the utilization of renewable energy sources, and the creation of community- accessible green spaces. The current level of detail may not sufficiently convey the depth of commitment to environmental sustainability or provide a clear roadmap for achieving these objectives.</p> <p>To bridge this gap, it is imperative that the redevelopment plans not only espouse the principles of sustainability but also lay out a concrete strategy complete with specific targets, benchmarks, and timelines. This strategy should detail the incorporation of green infrastructure elements, such as permeable pavements, rain gardens, and green roofs, that contribute to stormwater management and biodiversity. Similarly, the plans should explicitly address the integration of renewable energy solutions, aiming to significantly reduce the carbon footprint of new developments. Furthermore, the commitment to creating community-accessible green spaces should be elaborated, specifying the extent, features, and accessibility of these spaces to ensure they meet the recreational and social needs of the community while enhancing local ecology.</p> <p>By articulating these sustainability targets and benchmarks with greater specificity, HPNS redevelopment plans will not only align with global best practices in urban renewal and environmental stewardship but also resonate more deeply with community aspirations for a sustainable and thriving future. This approach underscores a commitment to not just remediate past environmental damages but to reimagine and reconstruct the shipyard area as a model of sustainable urban living, thereby setting a benchmark for similar projects worldwide.</p>	<p>The Navy understands your concern and appreciation for the incorporation of sustainability in the redevelopment of HPNS. Navy remedies are developed and constructed to meet the City of San Francisco's/Office of Community Investment and Infrastructure (OCII) (2018) redevelopment plan for HPNS; the Navy does not have input on future site redevelopment or the incorporation of sustainable practices. Questions and concerns on redevelopment and sustainability should be directed to SFDPH or OCII, which is responsible for redevelopment and reuse of the property. The Navy will continue to work with SFDPH and OCII throughout the remedial action phases of the project and through property transfer.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
5	<p>To augment the ongoing efforts, it is crucial to integrate these enhancements: Developing more robust mechanisms for community involvement to ensure their voices significantly influence remediation planning and decision-making processes. Clear articulation of sustainability principles in the redevelopment of parcels, with specific targets and benchmarks that align with environmental sustainability and community well-being goals.</p>	<p>Community input as to the remediation planning and decision-making process is included as part of the CERCLA process. The Navy welcomes suggestions regarding methods for improving engagement with the community. The Navy takes a proactive role in community outreach activities, including presentations every other month to the Mayor's Hunters Point Shipyard Citizens Advisory Committee (HPSCAC) which is a forum for the community to hear about technical topics, schedule updates, and give them opportunities to engage with the Navy representatives directly.</p> <p>The Navy appreciates the concern and interest in incorporating sustainability in the redevelopment of HPNS. Navy remedies are developed and constructed to meet the City of San Francisco's/OCII (2018) redevelopment plan for HPNS; the Navy does not have input on future site redevelopment or the incorporation of sustainable practices. Questions and concerns on redevelopment and sustainability should be directed to SFDPH or OCII, which is responsible for redevelopment and reuse of the property. The Navy will continue to work with SFDPH and OCII throughout the remedial action phases of the project and through property transfer.</p>
6	<p>Given the concentration of existing toxic contamination sites, it is pertinent to project hazards based on more than conservation projections. Closed sites where clean up may or may not occur in the future contains residual contaminants and will be vulnerable to rising groundwater.</p>	<p>Under the CRA, project hazards were evaluated for all environmental cleanup sites at HPNS, including both active and closed environmental cleanup sites. Conservative projections were used, as they generally reference the worst-case scenario in response to the effects of rising sea level or groundwater inundation at sites across HPNS.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
7	Only one parcel is identified as being impacted by permanent groundwater emergence in the near- term (2035). We urge the Navy to consider the work of Dr. Raymond Tompkins that examines past and present-day vulnerabilities and the risk assessment of unpredictable, toxic plume migration.	The Navy will discuss additional climate resilience studies and modeling in areas at HPNS identified as potentially impacted. The work will be conducted according to guidance established by regulatory agencies, DoD, and industry best practices, using the best available science from peer-reviewed sources. The Tompkins study will be evaluated in addition to other relevant climate studies for future modeling efforts.
8	Transient climate change phenomena have a high probability of occurring and causing damage within these parcels. More should be done in terms of preventative climate resilience in addition to regular maintenance, specifically the installation of climate resilient infrastructure.	The Navy has incorporated climate resilient infrastructure (including for transient storms) within the design of the remediation remedies for many years. Examples of this type of infrastructure include rock revetment walls along the shorelines of many parcels, a seawall on Parcel E-2, the landfill cap, and the upcoming development of wetlands on Parcel E-2 to help capture and contain excess water. Additional impacts from transient phenomena (such as storms) will be discussed with the agencies as part of site-specific studies. This information will be communicated with the community at HPSCAC meetings and via information factsheets.
9	I and the Gray Panthers of San Francisco support the SF voters and the Bayview Hunters Point Community in advocating for 100% cleanup (not capping) of radioactive and toxic waste, and 100% retesting to replace Tetra Tech's fraudulent work. The EPA found most Tetra Tech soil samples on a large portion of the site to be unreliable. Despite confirmed falsification, Tetra Tech has not been held accountable, thus delaying the cleanup's progress and worsening community health effects.	<p>The Navy has developed a robust radiological retesting plan and has been implementing the plan for several years. The approach for retesting has been approved by United States Environmental Protection Agency (USEPA), California Department of Toxic Substances (DTSC), and California Department of Public Health (CDPH) who are overseeing the work.</p> <p>With respect to 100% cleanup versus capping, the Navy in coordination with state and federal agencies have concurred on the proposed cleanup plans to address onsite contamination.</p> <p>These plans include treating and/or removing soils and groundwater for many types of contaminants until cleanup goals are met. The Navy evaluates cleanup options at the Feasibility Study stage within the CERCLA process using the National Oil and Hazardous Substances Contingency Plan nine criteria. The Navy and agencies agreed to leave waste onsite in areas that have engineered controls and institutional controls that will prevent inadvertent access to those areas and restrict the use of these areas to recreational use. Additionally, these areas will continue to be monitored to ensure that all remaining wastes stay properly contained. Types of institutional or engineering controls used at HPNS in addition to the cap/cover include prohibiting drinking water wells, excavation without proper oversight and approval, and inspection/repair/and long-term</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
		<p>monitoring of the cap/cover.</p> <p>The monitoring data collected and evaluated by the Navy at each capped site are provided to the state and federal agencies (such as the USEPA, DTSC, San Francisco Regional Water Quality Control Board [Water Board] and SFDPH) for review and comment. Implementation of cleanup remedial actions is still ongoing.</p> <p>On parcels where a durable cover is part of the remedy, the cover will be monitored, maintained, and repaired even after property transfer is complete. The specifics of who will conduct the monitoring and maintenance on a property following transfer will be negotiated during the property transfer process between the Navy, City of San Francisco, and regulatory agencies and will largely depend on the types of institutional controls which will remain in place. The Navy has a robust maintenance and monitoring program that repairs the durable cover to help maintain the remedy.</p>
10	Immediate action is needed, specifically, installing industrial-grade dust barriers along the A-2 and E-2 western fenceline to reduce community exposure to airborne matter.	<p>The Navy appreciates the community's concern regarding airborne dust. This concern is one of the reasons why the majority of the site is covered in asphalt or clean soil in order to minimize fugitive dust. Additionally, any active remediation projects that may involve dust is mitigated at the site with engineering controls and monitored utilizing upwind and downwind air and dust monitoring stations. The air monitoring results are posted to the Navy's website at Base Realignment and Closure (BRAC) Program Management Office > BRAC Bases > California > Former Naval Shipyard Hunters Point > Documents (navy.mil).</p>
11	Potential homebuyers must be provided with full disclosure of the site status, history and cleanup goals.	<p>Residential homes are located on land not owned by the Navy and comments regarding disclosure documentation to potential homeowners should be directed to the City of San Francisco or the developer. Residents should contact the SFDPH/OCII/developer regarding additional disclosures available for residents living on former HPNS Parcel A.</p>
12	5th 5-Year Review Draft: The review raises more unknowns than knowns, with nearly \$1.5 billion spent to date. The Navy's Fifth Five-Year Review (Draft) for the Hunters Point Naval Shipyard (HPNS) Federal Superfund Site has faced criticism, particularly regarding its effectiveness in protecting residents and workers from hazardous substances. The review evaluates superfund cleanup sites like HPNS every five years, focusing on three questions. (with answers in BOLD)	<p>The Navy is required to review the remedies at HPNS every five years as part of the Five-Year Review process. The goal of the Five-Year Review is to evaluate whether cleanup is being implemented as designed and if the public and environmental continue to be protected from site contaminants. The Navy works with the regulatory agencies to develop protectiveness statements for each parcel. Each of the questions posed in the comment are</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>1. Is the remedy functioning as intended? UNKNOWN</p> <p>2. Are the original exposure assumptions and cleanup levels still valid? NO</p> <p>3. Has any new information emerged that could question the protectiveness of the remedy? YES</p>	being evaluated within the 5YR and are addressed under the CERCLA process as required.
13	Protectiveness Statements for site parcels relying on incomplete data are deemed invalid. Parcels should not be considered protective until work is complete and validated.	The Navy understands your concern; however, parcels can still be protective of human health and the environment if there is a chance for human and ecological receptors to come into contact with onsite waste. This does not mean that the work is complete, only that there is no exposure to contamination while the work is ongoing.
14	The Navy acknowledges climate change as a significant factor affecting proposed remedies. Capping radioactive and toxic waste is insufficient against predicted sea level rise by 2065.	The Navy is evaluating climate change as part of this Five-Year Review and has already committed to conducting additional studies and modeling in areas where climate change may impact the site.
15	Strategies like avoiding soil disturbance and using raised bed gardening are inadequate for future residential use. There's no guarantee soil won't be disturbed by future activity.	<p>The sites will be transferred to the City of San Francisco following completion of remedy installation. As part of that transfer, certain land restrictions will be put into place to restrict onsite residents from planting a garden on native soil beneath the engineered asphalt caps.</p> <p>On parcels where institutional controls are part of the remedy, the controls (such as the use of planter boxes) will be monitored after property transfer is complete. The specifics of who will conduct the monitoring and maintenance on a property following transfer will be negotiated during the property transfer process between the Navy, City of San Francisco, and regulatory agencies and will largely depend on the types of institutional controls which will remain in place. Currently, the Navy has a robust maintenance and monitoring program that inspects the various aspects of the institutional controls on a regular basis.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
16	<p>Why not leave the wood-framed structure in place, wrap the building with protective sheeting, and perform all the concrete slab demolition, and toxic soil reclamation BEFORE tearing down the building?</p> <p>This would hold in all the dust until AFTER the ground has been excavated, and re-covered, preventing massive amounts dust from blowing around the base, and the surrounding Bayview neighborhood.</p> <p>It is clear, even without the recent. extremely high winds gusts, that dust blows all around frequently. Tenting the structure, and closing-in the excavation operations makes perfect sense. It would cut down noise as well.</p>	<p>The Navy appreciates the ideas presented in this comment with regard to Building 123. All mitigation efforts have been evaluated extensively by Navy experts and contractors and review and approved by the regulators.</p> <p>Unfortunately, removal of the concrete pad without removal of the wood building frame was not feasible. The safest method for removing the subsurface contamination at Building 123 is to remove the entirety of the building. During the demolition the dust is controlled under the approved air and dust monitoring control plan.</p>
17	<p>One commentor provided a variety of web links to news articles about HPNS; however, no comments relevant to the Fifth FYR were received, and a response is not possible.</p>	

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
18	<p>Your recommendations from this report, as stated on page xviii are as follows:</p> <p>Radiological objects (ROs) were identified during excavation and remediation of soil in areas that were not considered radiologically impacted. There is a high degree of confidence that discrete ROs were removed to a depth of 2 feet below ground surface (bgs). However, there is a potential for ROs to be present in material below 2 feet bgs where shoreline expansion has occurred since 1946.</p> <p>Your recommendation is to “Evaluate additional remedies to address the potential presence of ROs in material 2 feet bgs and prepare the appropriate post-ROD documentation.” This is vague and unspecific, leaving the community with no way to measure the extent of the danger or the progress of any remediation. Your report then gives a nod to climate change and the effects of rising water; yet your plan is just to put a “durable cover” over the toxic sites and put in protective fencing. You say in the future you will build a sea wall and monitor the landfill gas. Your report speaks to the need to continually check these “durable asphalt covers” for cracks and shifting.</p> <p>The Navy’s plan does not state that it will do this monitoring in perpetuity to ensure immediate remediation when these durable covers start cracking and shifting, exposing the toxic materials. The same assurances are not given for “repairing” the foundations of buildings with the goal of sealing the foundations so the toxic soil will not be exposed. This review does not address what happens when there is an earthquake or even less dramatic events that shift the buildings on their foundations. The Navy must be responsible in perpetuity to fix it.</p>	<p>The statement summarizes the overall recommendation to proceed with the CERCLA process. The details related to the remedy evaluation will be provided in the Proposed Plan that will be available for public comment when prepared. The recommendation in the CRA is to follow the identification of vulnerabilities in the CRA with site-specific studies to further validate them, conduct human-health and ecological risk assessments to determine whether the protectiveness statements in the Five-Year Review will be impacted, and then assess remedial measures to address any human health or ecological risk.</p> <p>The land use control remedial designs for each parcel include requirements for maintaining and enforcing compliance with institutional controls in perpetuity. The institutional controls are described in Section 1.3.4.2 which states that these controls “will be incorporated into the Quitclaim Deed and Covenant to Restrict Use of Property and will take effect upon transfer to the City and County of San Francisco’s OCII and issuance of those documents”. This includes maintaining the durable covers in accordance with their respective Operations and Maintenance (O&M) plans. These plans are referenced in their respective Five-Year Review sections (3.4.1.2, 3.4.2.2, 3.4.3.2, 4.4.1.2, 4.4.2.2, 5.4.1.2, 5.4.2.2, and 5.4.3.2) and are publicly available in the Administrative Record. The O&M plans describe requirements for routine inspections and maintenance as well as emergency inspections and repairs.</p> <p>On parcels where a durable cover is part of the remedy, the cover will be monitored, maintained, and repaired even after property transfer is complete. The specifics of who will conduct the monitoring and maintenance on a property following transfer will be negotiated during the property transfer process between the Navy, City of San Francisco, and regulatory agencies and will largely depend on the types of institutional controls which will remain in place. Currently, the Navy has a robust maintenance and monitoring program that repairs the durable cover to help maintain the remedy.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
19	<p>After publishing in the newspaper and in mailouts you sent to the residents of Bayview/Hunters Point that the public inspection and comment period would run until April 7, 2024, you changed the deadline online at your site to March 31, 2024, which cuts an entire week off the comment period. Please correct your date online so that it is consistent with the mailers.</p>	<p>The Navy public comment period was extended until May 7, 2024. This was advertised in public notices published in the San Francisco chronicle and through various community outreach communications.</p>
20	<p>Public comment letter suggesting that the Navy has not adequately addressed the site contamination with statements such as the following:</p> <ul style="list-style-type: none"> • San Francisco voters overwhelmingly passed (over 86%) Proposition P over 20 years ago to ensure that the U.S. Navy cleaned up the HPNS to the highest standards; yet that is not even mentioned in your report. Your cleanup efforts have not even come close to those standards. • Simply putting a cover on it when you are not digging down far enough to remove the tainted soil and the radioactive objects buried within it, putting up a fence warning the rising water to stay out and building a sea wall are insufficient. The Navy's assessment of future concerns from rising groundwater makes clear that below the Navy's "protective covering," they are leaving heavy metals, such as mercury and zinc. 	<p>Refer to response to comment #9 above.</p> <p>The Navy performs cleanup under CERCLA law which is driven by risk-based scenarios while also considering property re-use. The Navy is committed to working within that framework while ensuring there is no unacceptable risk to human health and the environment now or in the future.</p>
21	<p>Public comment letter suggesting that the Navy has not adequately addressed the site contamination with statements such as the following:</p> <ul style="list-style-type: none"> • The report also states that the Navy and the EPA have identified certain Per and Polyfluoroalkyl (PFAS) compounds as emerging chemicals of environmental concern on the parcels and that the Navy is in the process of implementing corrective actions. Yet, there will not be another report for five years. The presence of PFAS could not have been a surprise to the Navy, given the presence of PFAS on military bases nationwide. This is additional toxic exposure for the population. • The Navy declared Parcel A properly cleaned up; yet Strontium-90, a known causative agent for bone cancer, and other radionuclide and chemical toxins (many carcinogenic) continue to surface in soil and groundwater testing. • The report claims the objectives for remediation of Parcel B are being met, but the Navy won't actually finish even the retesting until 2025. The idea of developing this area at all for residential use is unacceptable. The same can be said for Parcels C and D. 	<p>The Navy is currently preparing a remedial investigation work plan to assess the extent of PFAS contamination on HPNS. The draft work plan is scheduled to be issued in 2025. The report will be developed in collaboration with and reviewed by the regulatory agencies. To date there is no known exposure of PFAS to the population.</p> <p>Parcel A has completed remedial actions and was subsequently transferred to the City of San Francisco for redevelopment. There is no history of radiological use on Parcel A and the Navy is not aware of soil or groundwater samples on Parcel A containing strontium-90.</p> <p>With respect to Parcels B, C, and D, the Navy is working with the regulatory agencies to meet the cleanup objectives identified for each site based on the proposed future reuse. Residential development will only be completed if the cleanup objectives are met and the regulatory agencies agree.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
22	<p>The Sea Level Rise Vulnerability Assessment (SLRVA) provides an unreliable and unrealistic estimate of future sea level rise for the following reasons:</p> <ul style="list-style-type: none"> • Does not use the best available science as presented in the State of California’s 2024 Sea Level Rise Guidance Document. The SLRVA should immediately adjust to referencing the updated document. • Does not consider sea level rise over the lifetime of development and remediation projects that will be based on the findings of this assessment. The SLRVA should consider SLR through 2100. • Does not consider numerous combined climate impacts and local environmental factors that affect the impact of sea level rise on flooding and groundwater rise. The assessment must include an evaluation of the combined impacts of projected wave runup, storm surge, rainfall, and erosion. • Does not discuss local environmental factors such as tidal flux and land subsistence. Both should be considered due to the enormous potential influence they could reasonably be expected to have on this site. • Relies on the assumed perpetuated existence of a seawall to determine future flood risks. This is not best practice in California. Vulnerability should be assessed assuming the seawall doesn’t exist (and may fail.) • Any development being considered in coastal California in light of climate change is expected to include the key considerations listed above. The fact that they are missing from an SLRVA adjacent to San Francisco Bay — which is hydrologically complex and subject to relatively significant impacts caused by climate change — is unacceptable. It is nothing short of alarming that these variables are missing from a SLRVA that will directly influence how a community already overburdened with pollution will plan for potential toxic waste mobilization in their neighborhood. 	<ul style="list-style-type: none"> • The Navy has used sea level rise projections by eminent scientists assembled by DoD (Hall, 2016) and that are available in the DRSL database. These are installation-specific, rather than regional, projections and are consistent with DTSC’s resilience target of 3.5 ft of sea level rise by 2050. Consequently, it reflects the best available science that DoD plans to update periodically (Hall, 2016). After the CRA was included in the Draft FYR, the California OPC prepared updated 2024 guidance with much lower sea level rise projections for future years. The Navy’s DRSL projections are more conservative. Reference: Hall, J.S. (2016). <i>CARSWG-Regional Sea Level Scenarios for coastal Risk Management: Managing the Uncertainty of Future Sea Level Change and Extreme Water Levels for Department of Defense Coastal Sites Worldwide</i>. U.S. Department of Defense, Strategic Environmental Research and Development Program • The Navy plans to assess the Year 2100 impacts as part of site-specific studies that will be discussed with the agencies. • The CRA already assesses projected storm surge impacts combined with sea level rise in the Years 2035 and 2065. Tide gauge data were used to provide quantitative estimates for extreme water levels resulting from storms and tides. Extreme still water level estimates are provided for different annual chance events whose probabilities are contingent on the underlying SLR scenario assumptions. The EWLs include the effects of tides and storm surge, occurring on top of rising seas as specified in the five SLR scenarios. They do not include the effects of waves. Other combined impacts will be discussed with the agencies as part of the planning for site-specific studies. • DRSL (2015) does consider vertical land movement (VLM) in its sea level rise projections for both 2035 and 2065, as estimated through local tide gauges and continuous GPS stations. Both will be considered during planning of the site-specific studies. • In a careful approach, the Navy’s CRA considers the seawall when assessing inundation due to sea level rise and storm surges, but not when assessing the impact of rising sea levels on rising groundwater levels. These are the primary design criteria that were used in designing the shoreline protection in Parcel E/E-2 (CES. 2018. Final Design Basis Report,

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
		<p>Parcel E, Hunters Point Naval Shipyard, San Francisco, California.):</p> <ul style="list-style-type: none"> – The range in water levels due to tidal fluctuations and potential sea level rise. – The impact of anticipated maximum wave energy – The need to encapsulate all potentially contaminated sediment and therefore extend the shoreline protection needs to the offshore parcel boundary – The need to minimize filling the bay with riprap – The planned use of the area as open public space, and the possibility for foot traffic along the shoreline – The requirement to minimize negative impacts to the bay and intertidal zone <ul style="list-style-type: none"> • The CRA in Appendix A is a first of its kind screening level assessment of climate change hazards within the Navy and DoD. Refinements to the CRA to include other factors will be discussed with the agencies during the planning for site-specific studies.
23	<p>The SLRVA does not incorporate the best available science regarding future sea level rise (SLR) estimates. The HPNS CRA used the SLR projections of 1.0 feet and 3.2 feet for the years 2035 and 2065, respectively, to predict the upper limit of the range of SLR scenarios evaluated. These projections were based on the 2018 Update of the State of California Sea Level Rise Guidance Document. Since then, there have been significant advancements in scientific understanding and ability to project future sea level rise. The Ocean Protection Council’s newly updated 2024 Sea Level Rise Guidance Document represents best available sea level rise science in California and should be the referenced document.</p> <p>We note that while the latest guidance document projects a lower amount of sea level rise by 2050 (1 foot of sea level rise by 2050) this is not representative of an overall trend towards lower-than-expected rates of sea level rise. Rather, acceleration of rates is likely to happen closer towards the end of the century — which is still well within the lifetime of development considerations that will be made in relation to this assessment.</p>	<p>DoD plans to update the DRSL guidance periodically, just as OPC is updating theirs periodically. The Navy is comparing DRSL projections with those from California OPC and verifying that the two projections are similar. In the case of Hunters Point, DRSL projections are similar to those of OPC (2018) and currently more conservative than those of the updated OPC (2024) projections. The DRSL projections are also consistent with DTSC’s design goal of 3.5 ft of SLR by 2050. The Navy has a considerable stake in obtaining accurate sea level rise projections, based on the best available science, given its interests in navigation and coastal infrastructure.</p> <p>In the latest (2024) OPC guidance, not only has the 2050 Intermediate-High sea level rise projection dropped from 1.9 ft to 1.0 ft for San Francisco Bay Area, but the 2100 projection has dropped from 6.9 ft to 4.8 ft. The Navy plans to assess the Year 2100 during the site-specific studies that are being discussed with the agencies.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
24	<p>The SLRVA only predicts SLR at 2035 and 2065. These timeframes do not adequately address the timeframes that the proposed development will endure. Any structure built today must be assessed for at least a fifty-year lifespan, and more realistically at least 70 years. The lifetime of the development should be considered in part because sea level rise is expected to increase sharply after 2050: The 2024 Sea Level Rise Guidance document estimates 6 feet around 2100.</p> <p>As sea level rise quickly accelerates, opportunities to adapt or ‘deal with it’ will become dramatically limited. It is important to plan realistically for the future now in order to facilitate phased adaptation opportunities over time.</p>	<p>The Navy plans to include the 2100 scenario during site-specific studies.</p> <p>The CRA in Appendix A was a first step by the Navy (and DoD) in addressing a very complex set of hazards, the projections for which are changing from time to time (e.g., OPC 2024 versus OPC 2018). The Navy will continue to assess these climate hazards using best available science as it proceeds to site-specific studies, the plans for which are being discussed with the agencies.</p>
25	<p>The SLRVA also does not appear to model for any combined climate impacts due to wave runup, storm surge, rainfall, erosion, or other potential variables that are known to dramatically increase the impacts of flooding and groundwater rise related to sea level rise. Recent research studying combined climate impacts in coastal California shows that waves are getting bigger, which intensifies the impact of wave runup on flooding and intrusion into the groundwater table. This is a potentially significant variable at BVHP due to the exposure of the Bay to aggressive Pacific swells. Studies also show that California’s atmospheric rivers, which in recent years have brought several inches of rainfall per year to the Bay Area, are also getting more intense, which will bring more rainfall to BVHP in a shorter amount of time. In parts of BVHP, groundwater mixed with toxic contaminants sits only one foot from the soil surface, and large rain events could have a dramatic impact on whether and how quickly the water table (and the toxic waste within it) reaches the surface. Proper analysis of these combined climate risks and their interaction with sea level rise would undoubtedly affect the anticipated location and amount of flooding that can be expected in Bayview Hunters Point.</p>	<p>Assessing the impacts from combined climate hazards will be discussed with the agencies during the planning of the site-specific studies.</p>
26	<p>The SLRVA also fails to discuss basic environmental factors, such as tidal flux and land subsistence, which are known to affect flood risk in California. Tidal influxes in the Bay Area are some of the most dramatic in coastal California — tidal influxes alone can be responsible for 9 feet of lateral shift in the tide line. Land subsistence should also be discussed as part of this SLRVA given that much of the area in BVHP sits on top of infill that would be dramatically upset by subsistence.</p>	<p>DRSL (2015) does consider vertical land movement (VLM) in its sea level rise projections for both 2035 and 2065, as estimated through local tide gauges and continuous GPS stations. Both will be considered during planning of the site-specific studies</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
27	It is not appropriate to base any SLRVA off the assumed existence and functioning of a seawall. The SLRVA should assess the impacts of SLR without a seawall in order to understand the actual risks of SLR in the area, which is important for general considerations and also should the seawall fail due to a catastrophic event (earthquakes, tsunamis, floods, or fires and explosions).	In a careful approach, the Navy's CRA considers the seawall when assessing inundation due to sea level rise and storm surges, but not when assessing the impact of rising sea levels on rising groundwater levels.
28	Surfrider has major concerns with the methodologies used to predict groundwater rise. Models of coastal groundwater and contaminant movement should be constructed as a synthesis that includes tidal effects on a range of geochemical conditions, interactions with urban infrastructure or heterogeneous fill materials, and contaminant movement. ⁴ The Navy's groundwater rise assessment is instead based only on calibrating the current groundwater table to projected SLR and does not include the synthesis of contaminant movement with impacts of intensifying storms expected with climate change. This likely results in an under-reporting of realistic impacts and potentially inaccurate assumptions about where toxic waste may be mobilized.	The Navy's approach is conservative and assumes that every 1 foot of sea level rise will be accompanied by 1 foot of groundwater table rise, everywhere on the installation. In actuality, all other factors, especially distance from the shoreline (and tidal influence), will tend to wane further inland. Other, more detailed, groundwater modeling will be discussed with the agencies during site-specific studies.
29	Surfrider is also concerned that the Navy's assessment does not adequately incorporate the effects of heavy rainfall. In addition to a gradual rise in baseline groundwater, heavy rains could cause drastic increases in groundwater levels. Soil saturation also reduces the ability of the soil to absorb rainwater, which can lead to flooding and liquefaction risk. At a minimum the Navy should conduct more frequent sampling at its monitoring wells, particularly after storms, to better assess groundwater rise and/or find another way to incorporate the impact of more intensifying storms on the rise of the groundwater table.	Much of HPNS is covered with impermeable asphalt covers or buildings. In Parcel E-2, much of the land surface is covered with the impervious landfill cap and wetlands. As such, not much recharge of rainwater is expected to groundwater. Some parts of HPNS have a 2-foot or 3-foot thick vegetated clean soil cover through which groundwater could rise in a storm.
30	The Climate Resilience Assessment (CRA) estimates that groundwater emergence from SLR may occur within Parcel E by the year 2065 (Appendix A). This estimate does not appear to take into consideration the combined impacts due to rainfall, wave runoff, storm surge, erosion, tidal flux or other potential variables that could increase SLR. The Navy's SLR assessment must include rainfall impacts on groundwater elevation as well as tidal and other marine influences, and consider erosion and inundation impacts from rising tributary water levels during storm events. Surfrider requests a more robust assessment that takes into account these variables, not just for Parcel E but for all sites.	The potential for inundation due to storm surges has been discussed in the CRA for 2035 and 2065. Because much of HPNS is covered by impervious surfaces (asphalt or buildings), there is very little recharge expected to groundwater during rainstorms. Extreme weather impacts will be discussed with the agencies during the planning for site specific studies.

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
31	<p>As recommended in the San Francisco Civil Grand Jury Report (2022), Surfrider asks that the Navy create detailed maps of the groundwater surface at the Shipyard site under different sea-level rise scenarios, including combined impacts due to wave runup, storm surge, erosion, tidal flux or other potential variables that could increase SLR. The maps should take into account planned changes to the site, such as shoreline structures and the addition of clean soil, and carefully map projected groundwater flows and the locations of known contaminants.</p>	<p>The CRA makes preliminary assessments of groundwater table rise, using similar methodologies to the ones used by other regional entities, such as the City of Alameda. More detailed assessment of the groundwater flow response to climate change hazards will be discussed with the agencies during site-specific studies.</p>
32	<p>Capping of waste near communities threatened by rising sea levels and rising groundwater is not an adequate solution.</p> <p>Even without more accurate sea level and groundwater rise modeling, the CRA identifies potential problems with the proposed remedies as soon as 2035. The CRA identified the following potential pitfalls that may be attributable to climate change:</p> <ul style="list-style-type: none"> • In 2035, limited impact from permanent groundwater emergence is projected to occur in Parcel D-1 (Figure 3-1 and Table 2-2). • In 2065, limited impacts from permanent groundwater emergence are projected to occur in Installation Restoration (IR) Sites 7 and 18 (IR 7/18), Parcels B-1 and B-2, C, D-1, E and E-2 (Figure 3-2 and Table 2-2). <p>The HPNS CRA also identified the following potential vulnerabilities resulting from other impacts previously identified:</p> <ul style="list-style-type: none"> • In 2035, a potential vulnerability to human receptors from permanent groundwater emergence at Parcel D-1. • In 2065, potential vulnerability to human receptors at the current ground surface from heavy metals due to groundwater emergence at IR 7/18, Parcels B-1, B-2, C, D-1, and E. • In 2065, potential vulnerability to San Francisco Bay receptors from heavy metals due to groundwater emergence at IR 7/18, Parcels B-1, B-2, C, D-1, and E. <p>In addition, we also note that the mobilization of Volatile Organic Compounds (VOC) is a risk unstudied in the CRA.</p> <p>The CRA findings in addition to others that Surfrider and community members are identifying indicate the need for enhanced cleanup as well as reconsideration of whether these parcels should be developed for people to actually live in. A more equitable vision for BVHP may be to set aside more areas for wetland and native plant restoration and allow for bioremediation, including phytoremediation, to address the toxic substances over time. Given the reality of SLR and groundwater rise, much of this area appears to be</p>	<p>This comment brings up many interesting issues. The Navy is and has been discussing many of these questions with the agencies. The screening level assessment in the CRA indicates that most impacts, including seawater inundation, are projected to occur on the seaward side of residential areas. Using a highly conservative methodology, groundwater table rise is projected in many parcels, but is expected to attenuate exponentially with distance from the shoreline. Additional assessments will be discussed with the agencies as part of the planning for site-specific studies to evaluate these impacts. Groundwater emergence projected in 2035 in D-1 will be an initial focus, with more scrutiny of the topography and groundwater levels.</p> <p>On the particular question of chlorinated volatile organic compounds (CVOCs), residual CVOCs (after ongoing or planned source treatment and removal) are not expected to persist through 2065 and their attenuation will be monitored through the ongoing monitoring program. For example, a 100 parts per billion (ppb) chlorinated VOC source should dissipate by approximately 99% over 41 years based on first-order decay and median point decay rates observed at chlorinated solvent natural attenuation sites (Newell et al., 2006).</p> <p>Reference: Newell, C. J., Cowie, I., McGuire, T. M., & McNab, W. W. (2006). Multiyear Temporal Changes in Chlorinated Solvent Concentrations at 23 Monitored Natural Attenuation Sites. <i>Journal of Environmental Engineering</i>, 132(6), 653–663. https://doi.org/10.1061/(asce)0733-9372(2006)132:6(653).</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	unsuitable to permanent infrastructure. Indeed, many local governments are now recognizing the need to relocate coastal infrastructure inland to allow space for the dynamic shoreline to calibrate to sea level rise.	
33	We therefore strongly encourage the Navy to strengthen its SLRVA to at least mimic standard sea level rise vulnerability analyses in California, and to adjust its perspective on available remedies accordingly.	For 2035 and 2065, the CRA starts with sea level rise projections that are more conservative than the latest projections in the California OPS (2024) guidance and seawater inundation and storm surge assessments therein are based on these conservative projections. The CRA is also consistent with the DTSC (2023) targets for sea level rise resilience of 3.5 ft by 2050. The Navy is planning to discuss additional studies (including an assessment of sea level rise in 2100) with the agencies as part of the planning for site-specific studies, as a follow on to the CRA.
34	<p>A better future for HPNS may be to showcase how polluted sites can be cleaned up and restored in a way that allows nature to help mitigate the impacts of rising seas. Based on some feedback from the community that Surfrider is aware of, we support a full and equitable cleanup that also:</p> <ul style="list-style-type: none"> • Avoids open-trucking contaminated soil through neighborhoods. • Avoids relocation of toxic waste to other disproportionately burdened communities. • Evaluates and employs emerging technologies to better address the soil and water toxicity. A high temperature electrothermal process should be evaluated as a safe and affordable technology. • Establishes a local toxics cleanup facility to treat soil onsite. 	<p>The Navy understands the communities' concerns as stated in the comment. The cleanup technologies used for remediation are evaluated within the Feasibility Study and some sites on HPNS do use in-situ technologies to cleanup contamination in-place; however, sometimes the type, location, or concentration of the contamination necessitate excavation of the contamination.</p> <p>When excavation is needed, the Navy does evaluate barging contamination offsite via ships to minimize trucking impacts. When trucking is used, the Navy employs various techniques, such as tarping, rumble strips, and tire cleaning, to minimize the impacts of trucks on the surrounding community.</p>
35	Several comments concerned the recommendations and findings included in the City of San Francisco Civil Grand Jury report.	The Navy has reviewed the recommendations and findings as they relate to the San Francisco Civil Grand Jury report and will continue to work with the City of San Francisco as part of the cleanup process and future land transfer.
36	The Navy found strontium-90 (Sr-90) exceedances in 23 soil samples in summer 2021. Regulatory agencies insisted the measurements were valid, but approved the Navy's change to the testing method, the most important part of which was hidden from the public. Using the new method, the Navy still found exceedances, and even after recounting those, still saw exceedances. The Navy then blamed those exceedances on its own purported failure to eliminate Pb-210/Bi-210 interference, even though the testing method specifically took into account the possibility of such interference and included steps to eliminate it. Now the Navy wants to use total beta strontium as its primary	The Navy is currently evaluating the laboratory method used to identify strontium-90 in soil collected from Parcel G radiological retesting investigation. This study is ongoing at the time of this Five-Year Review and final conclusions on the sampling method will be documented in reports issued later in 2024. Because the study remains ongoing, the final results and assessments of the study cannot be incorporated to this report prior to the deadline for this Five-Year Review Report. Currently, the overall protectiveness from radiological constituents remains intact at Parcel G and

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>screening method, and only measure for Sr-90 using a revised method as a confirmation. Taken together – and keeping in mind the scandal that led to this retesting in the first place – this string of events is highly suspicious and not only warrants further investigation, but at the bare minimum necessitates inclusion in the Navy’s draft five year review. The public needs to be aware that the Navy has continually obfuscated information that is critical to the community’s health, and has so far enacted a botched retesting of Parcel G at best, and fraudulent (again) at worst. The outright exclusion of the Sr-90 issue from the draft review is completely unacceptable.</p>	<p>there is no opportunity for offsite exposure to human receptors or the environment. Additionally, the institutional and engineering controls currently being implemented onsite, including fencing, security measures, air monitoring, and dust suppression, ensure protectiveness remains at all times.</p>
37	<p>After the Navy released the Fourth Five Year Review in 2019, the EPA and Navy engaged in a dispute over the protectiveness of the building remediation goals. In short, the EPA objected to the Navy’s use of RESRAD to calculate protectiveness and told the Navy to use the EPA Building Preliminary Remediation Goal (BPRG) calculator. The Navy refused, and the two parties were unable to resolve the disagreement. Under CERCLA and the Federal Facilities Agreement for HPNS, the Navy is required to use EPA guidance or gain EPA approval for an approach that would be equally protective, yet it has failed to do so. Publicly, there has been little to no disclosure of the dispute since 2020, but CBG has greater insight into the disagreement due to a FOIA request filed by Public Employees for Environmental Responsibility (PEER). Recently, PEER sent an updated request to EPA to capture any communications between the Navy and EPA since May 2021. In response, an EPA official wrote that, “the Navy has moved away from keeping the remaining buildings at the site except for five buildings that are on the National Historic Register... The goal now is to demolish 77 non-radiologically impacted and 25 potentially radiologically impacted buildings at HPNS.”</p> <p>However, despite this apparent (and huge) change in the buildings remedy, there is no mention of it in the Navy’s draft review. The shift from remediation to demolition of such a large number of buildings is a monumental decision – and elevates the importance of disposing the contaminated building material in a safe manner. Similarly to the shift in the remedy itself, there is no further discussion of building material disposal or any changes to the building RGs for the five buildings still set to be retained.</p> <p>These three issues – the change in remedy, how the demolished building material will be disposed of, and questions surrounding the adequacy of RGs for the buildings that will remain are all clearly ones that the public needs to not only be made aware of but given the chance to comment on. These matters should have been addressed in this draft FYR.</p>	<p>Any activities for the demolition and disposal of radiologically-impacted buildings is currently being planned for completion under the CERCLA process. Potential demolition activities under the FY23 congressional authorization remains in the early planning stages. Radiological retesting is planned and/or currently underway to verify that the soil remedial goals, which were determined to be protective and remain valid, have been met for each parcel that was identified in the Fourth Five-Year Review. Details for managing radiological building materials during demolition will be documented in work plans for regulatory agency review, as well as any appropriate post-ROD change documentation, as necessary. A discussion of this issue has been added to Section 1.4.3.1. The Navy will follow all applicable laws and regulations for any activity undertaken pursuant to this congressional authorization.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
38	<p>The draft review does not adequately assess the protectiveness of soil remediation goals. Instead, the draft review leans on the radiological addendum that was released as part of the Fourth FYR – which incorrectly asserted that the RGs were protective of human health. The draft review states that the addendum “concluded that the current RGs are protective for all future land users.” Of course, the RGs are not protective for all future land users; the Navy refused to run the risk calculations with the appropriate inputs for all such uses. The statement is false for a number of other reasons, in part because of its failure to acknowledge that EPA concluded it could not affirm the protectiveness of the soil PRGs, and that the Navy’s own risk estimates for its soil RGs in its Fourth FYR were higher than EPA’s general upper limit of the acceptable range.</p> <p>The only section of the draft review that includes any new information about the protectiveness of the RGs is Appendix F. The appendix displays results from the EPA’s new Peak PRG calculation method, evaluating the Navy’s RGs for HPNS. The results seem to show that the Navy’s estimate of cumulative risk for all ROCs remains virtually unchanged.</p> <p>Remarkably, the Navy’s own new estimate of total risk is again over the acceptable limit. The Navy estimates total risk from its soil RGs (see p. 531 of the draft FYR) as 2.7×10^{-4}, about three times the 1×10^{-4} general upper limit to the risk range. And the Navy only gets to that figure by leaving out the background for radium, which is required to be considered in establishing risk from RGs. When background is included for radium’s RG, the total risk goes, using the Navy’s calculational assumptions, up to 3.48×10^{-4}, well above the acceptable risk range.</p> <p>The listed RG for Radium-226 (Ra-226) is 1 pCi/g, when it should be 1 pCi/g above background. The Navy has continuously failed to correctly apply this rule, and the draft review is no exception. The correct RG should be 1.861 pCi/g, as described in the most recent retesting work plan, the “Removal Site Evaluation Work Plan, Parcels D-2, UC-1, UC-2, and UC-3,” released in 2023. A footnote for Ra-226 in the work plan states that “Remediation goal is 1 pCi/g above background per agreement with USEPA...Ra-226 background for definitive data is 0.861 pCi/g based on the off-site BTV determined in the Final Background Soil Study Report”.</p>	<p>As stated in response to comments from Addendum to the Fourth Five Year Review, Evaluation of Radiological Remedial Goals for Soil (June 2020): “While estimated risks for soils or buildings contaminated at the remedial goal may indeed exceed 1 in 10,000, the Navy will demonstrate that the final risk from exposures upon property release, including the risk from chemicals and other radionuclides, will achieve the CERCLA risk range. As discussed earlier, final site-specific data will be used to demonstrate the documented remedy was both achieved and is protective.”</p> <p>Public comments were solicited during the Proposed Plans developed for Parcel B (July 2008), Parcel C (March 2009), Parcels D/G (September 2008), and Parcel E/E-2 (February 2013), which presented the risk levels for the various parcels.</p> <p>Public comments reported concerns that risk exceeding 1 in 10,000 (1×10^{-4}) combined with chemical contaminant risks may exceed risk thresholds.</p> <p>As stated in the 40 CFR 300.340(e), “For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6}. In cases involving multiple contaminants or pathways where attainment of chemical [radiological]-specific ARARs will result in cumulative risk in excess of 10^{-4}, [factors related to technical limitations such as detection/quantification limits for contaminants; factors related to uncertainty; and other pertinent information] may be considered when determining the cleanup level to be attained.” These factors, along with inter-agency agreements, were considered in the development of the current radiological remedial goals, therefore 1.861pCi/g RG is not applicable.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
39	<p>The Navy's insistence on including inappropriate inputs skews the calculations. The scenario chosen by the Navy is resident without garden, which disregards the fact that there is no actual land use restriction on future residents growing produce in their gardens. The only restriction adopted to date is a requirement that gardens be in raised beds, but roots of plants penetrate far deeper than the raised bed and thus into remaining contamination. A hypothetical restriction requiring impermeable bottoms to such beds has never been actually adopted, and were it to be so, would be meaningless, as there is no realistic way to enforce it.</p> <p>When one includes the correct exposure scenario, residential with garden, and the correct RG for Ra-226, the excess cancer risk is staggering, and much greater than the Navy is asserting it is, 1.96×10^{-3}, or about twenty times higher than the upper limit of the acceptable risk range.</p>	<p>The scenario residential use without gardens is appropriate for planned future use because institutional controls preclude gardening and/or prevent contact with native soil. The institutional control for IR-07/18, and Parcels B-1, B-2, C, UC-2, D-1, G, E-2, and UC-3 prohibits growing vegetables, fruits, or any edible items in native soil for human consumption. The institutional control for Parcel E prohibits: "Growing any edible items (beneath the durable cover) unless grown in raised beds or containers (above the durable cover), with imported clean soil, and with a bottom that prevents the roots from penetrating the durable cover."</p>
40	<p>The Navy must amend the draft review to correctly apply the 'above background' rule to the Ra-226 RG and use the resident scenario with the garden pathway turned on, to accurately evaluate excess cancer risk from radiological contamination. Furthermore, the Navy is required to add the risks from chemical contamination in its risk calculations. Nowhere in the draft review are the risks from chemical contamination evaluated – and their exclusion in this section dilutes the true excess cancer risk even more than it already is. When they are included, risks from the RGs are substantially higher, and likely exceed protectiveness requirements by a considerable amount.</p>	<p>The Navy background concentrations for radiological constituents are extremely conservative. Additionally, the Navy disagrees with modeling for a garden pathway as there gardening within the native soil will not be permitted.</p> <p>As previously stated in the response to community comment on the Fourth Five Year Review, Evaluation of Radiological Remedial Goals for Soil (June 2020); "While estimated risks for soils or buildings contaminated at the remedial goal may indeed exceed 1 in 10,000, the Navy will demonstrate that the final risk from exposures upon property release, including the risk from chemicals and other radionuclides, will achieve the CERCLA risk range. As discussed earlier, final site-specific data will be used to demonstrate the documented remedy was both achieved and is protective."</p>
41	<p>The Navy's analysis of the impacts that climate change will have on the shipyard is deficient. While the analysis does acknowledge that climate change could cause contaminated groundwater to rise to the surface, it does not delve far enough into what that process could look like.</p> <ul style="list-style-type: none"> Sea level rise, storm surge, and seawater inundation are all only projected through 2065. Such a limited timeline does not take into account the even worse effects that will be felt by future shipyard residents decades later – it is a certainty that the same structures to be built by the redevelopment will exist far beyond 2065, necessitating a much longer timeline when projecting climate change's effects. Furthermore, sea level rise, storm surge, and seawater inundation are all intricately 	<p>The Navy's SLRVA projects that groundwater will rise and emerge at the ground surface in some places, but more studies are required to determine whether the rising groundwater will contain any contaminants or not. In many cases, it is likely that the rising groundwater table will consist of shallow groundwater flowing from cleaner upgradient areas. The Navy will discuss additional assessments of climate impacts (including groundwater rise and extreme weather impacts) with the agencies as part of the planning for site-specific studies.</p> <ul style="list-style-type: none"> An assessment of climate impacts in the Year 2100 will be conducted in conjunction with site-specific studies

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>linked, but are treated separately by the Navy's analysis. This distinction cannot be justified, as the combined effects of all three forces present much more risk than any single one does. Any analysis of sea level rise, storm surge, and seawater inundation must be conducted in a holistic manner, so as to capture the true danger of the three issues.</p> <ul style="list-style-type: none"> • Another concern that is overlooked in its Climate Resilience Assessment (CRA) is the movement of groundwater – the Navy assumes that sea level rise will uniformly push groundwater towards the surface, while in reality the process is more complicated than that. Rising groundwater could drive contaminants to other areas of the shipyard, or into the Bay itself. The effects of the asymmetrical distribution of rising groundwater as a result of sea level rise must be analyzed by the Navy. • Also on the issue of groundwater, the possibility that the rise of groundwater will affect the thin asphalt and soil covers used to supposedly keep contamination from the surface should be examined. Already the covers have the potential to be affected by cracking, burrowing animals, and plant uptake - rising groundwater could make the already-ineffective remedy even more so. • Lastly, the possibility that the biological and chemical composition of sub-marine environments will be altered by the increase in saltwater intrusion increases goes unmentioned in the Navy's assessment. Section 5.3.4 of the CRA discusses the effects of saltwater intrusion on subsurface remedies throughout the shipyard – and comes to the conclusion that “all parcels at HPNS are resilient to this potential exposure scenario – but there is no real consideration of the range of dangers that saltwater intrusion may present. 	<ul style="list-style-type: none"> • The Navy's CRA does look at combined effects in many cases. For example, the storm surge impacts projected in 2035 and 2065 are based on the mean sea levels and tides (and land subsidence) expected in those future years. Other potential combinations will be discussed with the agencies during site specific studies. • The CRA is a screening level tool and has assessed groundwater table rise using conservative rules of thumb, similar to the those used in similar studies (e.g., City of Alameda study). More detailed groundwater rise studies will be discussed with the agencies during the planning for site-specific studies. Reference: City of Alameda. (2022). Climate Adaptation and Hazard Mitigation Plan. Alameda. • More detailed studies of groundwater rise impacts will be discussed with the agencies during the planning for site-specific studies. • The conductivity measurements in base wide monitoring wells noted in the Basewide Groundwater Monitoring Plan (BGMP) (2022 and earlier years) show that saltwater intrusion on the HPNS peninsula has been relatively limited so far, with most inland and many shoreline wells indicating the low conductivity characteristic of freshwater. The CRA mentions that there is no subsurface remedy infrastructure projected to remain in 2035 and 2065 that may be impacted by saltwater intrusion, if that were to occur. There are no subsurface pump-and-treat and soil vapor extraction (SVE) components projected to remain by those times. Monitoring wells are designed to withstand a certain level of salinity.
42	<p>Outstanding issues from the 4th FYR that remain unresolved in the 5th FYR:</p> <ul style="list-style-type: none"> • Failure to Examine the Systemic Failure of the Cleanup Process Evidenced by the Tetra Tech Scandal – Just as in the Fourth FYR, the Navy's latest draft review fails to discuss, beyond a passing comment, the scandal that casts a shadow over much of everything that occurred in the cleanup to date. • Failure to Include Parcel A in the Five-Year Review at All – The exclusion of Parcel A from any evaluation in the draft review is unsurprising, but disappointing, nonetheless. The parcel was long ago declared non-impacted, without any kind of soil testing, and only a few building tests. • Drastically Reduced List of Radionuclides of Concern – The draft review does not 	<p>The conclusion of the Fourth Five-Year Review was that the data falsification called into question the radiological component of the remedy for Parcels B-1, B-2, C, D-1, D-2, G, UC-1, UC-2, and UC-3. Because radiological retesting has not been completed to confirm that remaining soils are below the remedial goals, this issue was retained as affecting future protectiveness. The pending litigation associated with the radiological retesting does not impact the protectiveness of the current remedial activities and therefore was not included in the Fifth Five-Year Review.</p> <p>Parcel A has been transferred to the City of San Francisco is no longer part of the HPNS CERCLA program and not subject to inclusion in the Fifth Five-Year Review. Furthermore, Parcel A received a no further action status</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>include any analysis of the decision to greatly reduce the list of HPNS radionuclides of concern (ROCs). In the 2004 Historical Radiological Assessment (HRA), the list included about 100 (33 long-lived) to only a handful in the Parcel G, Parcel C, and Parcel UC-1, UC-2, UC-3, & D-2 retesting plans.</p> <ul style="list-style-type: none"> • 90% of HPNS Arbitrarily Removed from Scope of Measurements and Cleanup – The 2004 HRA arbitrarily designated 90% of the shipyard to be exempt from any kind of cleanup. This questionable decision has never – in this draft review or otherwise – been appropriately explained. • Radioactive Sandblast Grit – As in the previous FYR, the Navy only mentions that removal actions of sandblast grit have been carried out at the site. It fails to mention the full scope of the sandblast grit issue: that the Navy does not really know where much of it is, and that the site itself could have been partly made out of radioactive grit. Sandblast grit and the dangers it may present should be more closely examined in the review. • Navy Further Weakening an Already Inadequate Remedial Method – The Fourth FYR made the admission that soil vapor extraction (SVE) was having trouble effectively reducing source mass of volatile organic carbons (VOCs) due to the conditions in the subsurface of the soil. This draft review makes the same assessment, stating that “SVE implementation in Parcels B-1 and C is reducing source mass, but with limited effectiveness due to diffusion-limited conditions in the subsurface. Although Institutional Controls (ICs) will maintain future protectiveness, source removal inefficiency is extending the period within which SVE will be implemented.” Furthermore, regulatory agencies, as they did in 2019, do not agree “with the Navy’s risk assessment methodology used to reduce the [Areas Requiring Institutional Controls (ARICs)] for VOC vapors.” Therefore, the Navy is both relying on ICs on the one hand and reducing the area for which they deem ICs necessary, by way of a manipulated risk assessment, all because the original remedy of actually cleaning up the VOCs isn’t working. This juxtaposition and its implications on protecting human health need to be further investigated in this review. • Soil and Asphalt Covers – Soil and asphalt covers are mentioned frequently throughout the draft review, but no words are dedicated to an interrogation of their effectiveness. Part of the introduction of these comments exposed that contamination can easily penetrate soil and asphalt covers, rising to the surface one way or another and putting human health at risk. Furthermore, development of the site will 	<p>designation under CERCLA and therefore is not subject to 5YRs.</p> <p>The 2004 HRA identified all potential radionuclides of concern on HPNS. Through additional research and testing, the list was narrowed down to the radionuclides of concern identified in the 2006 Action Memorandum and Parcel specific RODs. The radionuclides of concern were developed in coordination with regulatory agencies review and oversight.</p> <p>The conclusions of the 2004 HRA regarding where radionuclides were used onsite was based on historical research and personnel interviews. These conclusions, along with inter-agency agreements, were considered in the development of the current radiological remedial goals.</p> <p>Sandblast grit has not been identified as a potential contaminant or contaminant source on HPNS.</p> <p>Consistent with the Five-Year Review process, Section 3.4.4, 4.4.3, and 5.4.5 <i>Progress Since the Last Five -Review</i> restates verbatim issues identified in the previous Five-Year Review. This is followed up with Navy activities, actions, and assessments to address the issue from the previous Five-Year Review. Although soil characteristics have limited the desired effectiveness of the SVE, the Navy continues to work with the regulatory agencies to optimize remedial actions where SVE systems have had limited effectiveness. For example, at IR10, the Navy has taken a proactive approach of building/foundation demolition, followed by excavation and confirmation sampling in order to reduce or eliminate the source area.</p> <p>The review of the soil and asphalt covers is discussed in each respective Parcel’s Operations and Maintenance sections which evaluates the last Five-Year Review cycle operations and maintenance results. The concern over redevelopment is noted, the institutional controls require the following (from Table 1-2 of the Five Year Review):</p> <p><i>Restricted activities must be conducted in accordance with the Covenant(s) to Restrict Use of Property, Quitclaim Deed(s), O&M Plan(s), LUC RD Report, Parcel-specific RMP(s), and, if required, any other work plan or document approved in accordance with these referenced documents:</i></p> <p>a. <i>“Land disturbing activity” includes, but is not limited to, the following: (1) excavation of soil, (2) construction of roads, utilities, facilities, structures, and appurtenances of any kind, (3) demolition or removal of “hardscape” (for example, concrete roadways, parking lots, foundations, and</i></p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>necessitate tearing up whatever covers might exist. In light of those revelations, it is no surprise that the Navy is unwilling to include their own analysis, which would undeniably come to the same conclusion. Nonetheless, the Navy still must investigate whether just covering up rather than cleaning up contamination is truly protective, particularly over the lifetime of the contaminants, based on the most current information.</p>	<p><i>sidewalks), (4) any activity that involves movement of soil to the surface from below the surface of the land, and (5) any other activity that causes or facilitates the movement of known contaminated groundwater.</i></p> <p><i>b. Alteration, disturbance, or removal of any component of a response or cleanup action (including but not limited to pump-and-treat facilities, revetment walls and shoreline protection, and soil cap/containment systems); groundwater extraction, injection, and monitoring wells and associated piping and equipment; or associated utilities.</i></p>
43	<p>The Fifth Five Year Review Report (Draft Review) on Climate Resilience Assessment (“CRA”) is inadequate. It fails to use the most current data and projects forward only to 2065, an arbitrary date supported by no rationally defensible reasons when the planned Shipyard development will be occupied well beyond that date.</p>	<p>The CRA provided in the Fifth Five-Year Review (Appendix A) is intended to be a screening level assessment of climate change hazards. The Navy plans to assess site resilience up to the Year 2100 during site-specific studies. DoD plans to update the DRSL guidance periodically, just as OPC is updating theirs periodically. The Navy is comparing DRSL projections with those from California OPC and verifying that the two projections are similar. In the case of Hunters Point, DRSL projections are similar to those of OPC (2018) and currently more conservative than those of the updated OPC (2024) projections. The DRSL projections are also consistent with DTSC’s design goal of 3.5 ft of SLR by 2050. The Navy has a considerable stake in obtaining accurate sea level rise projections, based on the best available science, given its interests in navigation and coastal infrastructure.</p>
44	<p>Despite five years’ notice and without factual or legal justification, it simply ignored the statutory deadline for its Fourth Five Year Review (“Fourth FYR”), publishing it approximately nine (9) months late. The Navy further violated the law by publishing three Fourth FYR Addenda, the last of which issued approximately twenty (20) months after the deadline. Now, the Navy has the audacity to grant itself an ongoing extension, to institutionalize its Fourth FYR deadline violations by repeating them in its Draft Review. Rather than reverting to the lawful deadline, November 8, 2023, which the Navy has already blown past, the Navy says it will publish its Final Fifth FYR in July 2024.</p>	<p>The June 2, 2014 Memorandum from the Office of the Under Secretary of Defense for Five-year Review Procedures – Update to DoD Manual (DODM) 4715.20, “Defense Environmental Restoration Program (DERP) Management dated March 9, 2012 establishes subsequent signature dates for Five-Year Reviews as no more than five years from the date of the last signature (Page 44-45, Enclosure 3, paragraph 5 [b][1]). EPA guidance also establishes subsequent Five-Year Reviews as due by or before the date of the prior Five-Year Review. OSWER 9355.7-03B-P section 1.3.3 (“For reviews led by other Federal agencies, States, or Tribes, and where EPA has a concurrence role, the trigger for subsequent reviews corresponds to EPA’s concurrence signature date of the preceding Five-Year Review report.”)</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
45	<p>The Draft Review's radiological sections are flawed and fundamentally dishonest. The Navy has consistently misled the public throughout the cleanup, a practice it unfortunately continues in its Draft Review.</p> <p>Greenaction, among others, has always insisted that 100% retesting of Tetra Tech's work is necessary to rectify the fraud. The Draft Review is not honest enough to even mention the distinction between one-third retesting and 100% retesting or its significance to protectiveness.</p> <p>CERCLA requires 100% retesting. Without it, a data-driven long-term protectiveness determination is impossible.</p> <p>The Navy's own agreement also requires 100% retesting. But the Navy has spent the last three years attempting to invalidate its own data! Characteristically, the Draft Review fails to even acknowledge the agreement.</p> <p>If the Navy insists it will do only one-third soil retesting, it must articulate what data it is relying on in making any representations about protectiveness of the two-thirds of soil it did not or will not test.</p>	<p>Comment noted. The Navy disagrees with the commenter's characterization of the draft review.</p> <p>The retesting cleanup work plan was developed by the Navy and reviewed by USEPA, DTSC, and CDPH.</p> <p>Commenter's characterization of CERCLA is noted. Commenter does not provide any citation to support this legal conclusion</p>
46	<p>The Navy's primary five-year review obligation is to assure the remedy remains protective. The Navy generally claims radiological remedies "will be protective," when radiological retesting is done. However, the Navy has no factual basis for those claims.</p>	<p>The radiological retesting is ongoing at the time of this Fifth Five-Year Review. Based on the Navy work plans, further testing and associated analytical results would provide the factual basis that the site is protective once the retesting is done. This would need to be collaborated with the regulatory agencies before a site protectiveness determination is made.</p>
47	<p>All Shipyard Sites Should Be Identified As "Radiologically Impacted" Until Demonstrated Otherwise - The unexpected nature of the discovery of radiological objects identified during excavation and remediation of soil in areas that were not considered radiologically impacted, highlights that the Navy has not properly characterized whether all Shipyard locations are radiologically "impacted." It must revisit the issue in light of the facts and identify all parcels and sites as "radiologically impacted," until and unless it can demonstrate with defensible scientific data that any particular site is not impacted.</p> <p>The Navy must test for radioactive contamination in all areas of the Shipyard and because radiation may have been spread beyond the Shipyard, beyond its boundaries, as well.</p>	<p>Comment noted. Radiological retesting is planned and/or currently underway to verify that the soil remedial goals, which were determined to be protective and remain valid, have been met for each parcel that was identified in the Fourth Five-Year Review. Radiologically impacted areas are identified during the remedial investigation phase of CERCLA. Remediation is conducted under CERCLA and the Navy follows all applicable laws and regulations.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
48	<p>The Navy Continues to Mislead the Public - The Navy misleads primarily through omission. The Navy has misled the public by omitting the entire history of the radiological remediation. The Draft Review omits more than a decade of the cleanup's history. Rather than acknowledge the fraud (Tetra Tech) and its impact, the Navy merely says, "evaluations determined previous data were unreliable," and cites "uncertainty with a portion of the radiological survey and remediation work."</p>	<p>Refer to response to comment #42 above.</p>
49	<p>Radiological Retesting –</p> <ul style="list-style-type: none"> • The Draft Review ignores the Sr-90 results during retesting in 2021 at Parcel G. • The Navy also found radiological contamination in Parcels B and C. These findings are also ignored in the Draft Review. • Three years after the SR-90 was found exceeding remedial goals, the Navy still refuses to accept the exceedances as valid data. It has announced it is conducting an Sr-90 "verification study," which it plans to release in June 2024. There is no mention of this study in the Draft Review. 	<p>Refer to response to comment #36 above.</p>
50	<p>The Navy Violates Its Duty to Assure Protectiveness - The Draft Review claims, "This report is intended to identify issues that may prevent a particular remedy from functioning as designed, which could affect the protection of human health and the environment should exposure occur." But it fails to do so.</p> <p>The Draft Review Protectiveness Statements misleadingly claim that remedial actions at Parcels B, C, D, and G are "short-term protective." These claims are based on access controls, such as fences, signage, and caps, to restrict access to contaminated sites. By focusing on "short-term protectiveness," the Navy again improperly defers its protectiveness determination as it did in its Fourth FYR, which promised it would be addressed in the Fifth FYR. Now that time has come, but rather than stating the obvious truth – that the remedy is not protective of human health and the environment – the Navy defers it once again, defeating the entire purpose of five-year reviews.</p> <p>Instead of addressing long-term protectiveness, the Navy makes short-term claims, as summarized in the Draft Review:</p> <p>Based on this Fifth Five-Year Review, the remedy at IR-07/18 is Protective, the remedies at Parcels B-1, B-2, C, UC-2, D-1, D-2, UC-1, G, and UC-3 are Short-Term Protective because there are no current uncontrolled exposures, and the remedies at Parcels E and E-2 Will be Protective upon completion of remedy construction.</p> <p>This passage contains no statement that the remedies are protective in the long term or, except for Parcels E and E-2, will be. Similarly, in its Protectiveness Statements, the Navy</p>	<p>Comment noted. The Navy is committed to protecting human health and the environment using the best available science in a cost-effective manner as Congress allocates funding.</p> <p>Because the Navy has remedy components in place that prevent current exposures, it would be inaccurate to describe the remedy as Not Protective. To address a remedy component issue that could potentially affect future protectiveness the Five-Year Review process provides for consideration of Short-Term Protective or Deferred. Short-Term Protective is considered when site conditions are adequately characterized such that plans for optimization or corrective measures can be implemented to address the remedy component that is not functioning as intended. EPA guidance provides that "A protective determination of 'short-term protective' is typically used when the answers to Questions A, B and C provide sufficient data and documentation to conclude that the human and ecological exposures are currently under control and no unacceptable risks are occurring. However, the data and/or documentation review also raise issues that could impact future protectiveness or remedy performance but not current protectiveness." Deferred is considered when information is needed to better characterize site conditions such that appropriate optimization approaches or corrective measures can be identified. Because current</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>only discusses short term protectiveness, deferring the long term “until retesting is complete.”</p> <p>Radiological retesting is ongoing to confirm that levels in soils and structures are protective of human health. Until retesting is complete, short-term protectiveness is met through Navy controls such as access to the parcel through fencing, locked gates, and ICs (restricting intrusive work and maintaining durable covers).</p> <p>Neither CERCLA nor EPA guidance allow using short-term protectiveness to substitute for long term protectiveness. CERCLA requires both. Temporary measures are insufficient to satisfy long-term protectiveness. Fencing off and/or covering over contamination is not a permanent “remedial action being implemented,” they are not CERCLA removal or remedial actions. The Draft Review does not assure the remedy is protective for future families who may live on the Parcels for decades to come.</p>	<p>exposures are under control a determination of Short-Term Protective is appropriate while radiological retesting of parcels B-1, D-1, D-2, G, UC-1, UC-2, and UC-3 is conducted.</p> <p>In collaboration with regulatory agencies, the Navy modified the protectiveness determination for Parcels B-2, and C to protectiveness Deferred and outlined the steps to obtain the data needed to identify optimization approaches and/or corrective measures that will facilitate cleanup and provide long-term protectiveness.</p>
51	<p>The Navy has failed to demonstrate that its remedial goals for buildings and soil meet the current CERCLA risk range, and the Navy has no intention of doing so until after the retesting is complete.</p> <p>There is no valid data on which to base any assertion that the remedy is protective of human health and the environment in the long-term. For some Parcels, it may have soil data, but only in one-third of the soil tested. The Navy has not released this data. Nor has it released retesting data from buildings.</p> <p>The Draft Review must state the remedy is not protective of human health and the environment and then detail the steps necessary to achieve protectiveness and the timeline within which it will be accomplished.</p>	<p>Refer to response to comment #38.</p> <p>Consistent with the Five-Year Review Process, a “Not Protective” determination is considered when there are current uncontrolled exposures occurring. Because the Navy controls access and use of the sites with institutional controls and durable covers (physical barriers) that prevent current uncontrolled exposures, a “Not Protective” determination is inaccurate and inconsistent with the Five-Year Review process. Because current exposures are under control a determination of Short-Term Protective is appropriate while radiological retesting of parcels B-1, D-1, D-2, G, UC-1, UC-2, and UC-3 is conducted.</p>
52	<p>The Draft Review Violates the FFA and EPA Guidance - On January 22, 1992, the Navy, the EPA, and the Department of Toxic Substances for the State of California entered into the Federal Facilities Agreement for Naval Station Treasure Island – Hunters Point Annex (“FFA”). The parties agreed EPA CERCLA guidances would be mandatory.</p> <p>The Navy has failed to act in accord with this guidance by failing to: 1) determine whether there have been changes in toxicity or other contaminant characteristics that need to be investigated; 2) identify “recent toxicity data and their sources”; 3) investigate whether the exposure assumptions, toxicity data, and cleanup levels are still valid; 4) recalculate risk assessment to account for changes in standards and/or toxicity data; and 5) investigate the question, “Has any other information come to light that could call into question the protectiveness of the remedy?”</p> <p>The Draft Review acknowledges that “there have been some changes to toxicity values</p>	<p>Commenter’s characterization of the law is noted.</p> <p>Comment noted. Navy disagrees with the commenter’s assertion that Navy has failed to act in accord with [CERCLA] guidance:</p> <p>As indicated in the Five-Year Review text for Technical Assessment Question B, the protectiveness of the RGs was evaluated by comparing the remedial goals that were developed for the project as human health protective levels to risk-based screening levels based on current toxicity and exposure assumptions consistent with the exposure scenarios used to develop the remedial goals. The remedial goals that exceed current risk-based screening levels were identified on the comparison tables, as referenced in the text.</p> <p>The text directed the reader to the table providing the values and the comparison. If the current risk-based levels are higher or similar to the</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
	<p>and risk assessment methods,” the Navy summarily dismisses them, concluding they “do not affect remedy protectiveness.” However, the Navy failed to adequately explain why the changes do not affect protectiveness, failing to justify this conclusion; it cites no facts, data, or calculations, as required by EPA’s guidance.</p>	<p>remedial goals, the remedial goals are considered protective based on current risk assessment practices. As discussed in the Five-Year Review, in some cases the current risk-based levels are lower than the remedial goals, indicating if a receptor is exposed to the media at the RG there could potentially be unacceptable risks. However, as also discussed in the Five-Year Review, institutional controls and/or durable covers are in place in these cases limiting potential exposure, and therefore since there can be no exposure, there is no unacceptable risk and protectiveness remains. Risk evaluations were not performed to evaluate exposure to the material beneath the durable cover (to determine if the COC remaining below the durable cover is within an acceptable risk range) as there is no current exposure to the material remaining below the durable cover and therefore no unacceptable risk. Data was not compared to the current risk-based screening levels, the evaluation of protectiveness was performed by evaluating the protectiveness of the remedy.</p> <p>The respective Remedy Implementation and Remedy Operations and Maintenance sections of the Five-Year Review provide supporting information and evidence to the effectiveness of the remedy components that are used in the Technical Assessment section.</p>
53	<p>The Navy Failed to Update Risk Calculations (PRGs) Yet Again - In the Draft Review, the Navy claims it updated the risk calculations:</p> <p>Following the recommendation from the Fourth Five Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs [remedial goals] for soil and building structures, which concluded that the current RGs are protective for all future land users.</p> <p>Like much of the Draft Review, the Navy’s history of the Fourth FYR Addenda is misleading. After the Draft Fourth FYR was “finalized,” the Navy issued three addenda purporting to validate the RGs.</p>	<p>Please refer to Comment #37, which discusses soil Preliminary Remediation Goals.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
54	<p>In the Draft Review, the Navy claims it updated the risk calculations:</p> <p>Following the recommendation from the Fourth Five Year Review, the Navy issued addendums evaluating the long-term protectiveness of the RGs [remedial goals] for soil and building structures, which concluded that the current RGs are protective for all future land users.</p> <p>The remedial goals have not been updated since 2006, while EPA's default Preliminary Remediation Goals have been updated, most recently in 2023.</p> <p>The Navy needs to explain to the general public, using non-technical, commonly understood language, how the 2006 remedial goals could still be protective considering that the 2023 defaults are orders of magnitude lower than the remedial goals. The Navy must update the PRGs, "showing the arithmetic" to the public to justify the PRGs that result from proper application of the PRG calculators.</p>	<p>In the Fourth Five-Year Review addendum (Navy, 2020) and, as part of this Fifth Five-Year Review, the Navy evaluated protectiveness of the RGs by calculating the potential risks from the most conservative scenario: residential exposure to uniformly distributed levels of ROCs in soil. This was performed by inputting the RGs and site-specific/exposure-specific assumptions, which are provided in the Addendum and in Appendix F of the Fifth Five-Year Review, into the RESRAD-ONSITE computer model (for the Addendum) and the EPA's preliminary remedial goal (PRG) calculator (both for the Addendum and Fifth Five-Year Review) to evaluate whether the RGs would result in risks within or below the NCP risk range (10^{-6} to 10^{-4}). The risks for each ROC were generally within the risk management range with the exception of radium and thallium which were slightly above 1×10^{-4}. However, since the site is not uniformly contaminated, the actual risks from exposure to radionuclides in HPNS soils are expected to be considerably less than these maximum values.</p> <p>With regard to exceeding the recommended risk range: As stated in the 40 CFR 300.340(e) for CERCLA, "For known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 10^{-4} and 10^{-6}. In cases involving multiple contaminants or pathways where attainment of chemical [radiological]-specific ARARs will result in cumulative risk in excess of 10^{-4}, [factors related to technical limitations such as detection/quantification limits for contaminants; factors related to uncertainty; and other pertinent information] may be considered when determining the cleanup level to be attained." These factors, along with inter-agency agreements, were considered in the development of the current RGs. While estimated risks for soils at the RGs may indeed exceed 1×10^{-4}, the Navy will demonstrate that the final risk from exposures upon property release, including the risk from chemicals and other radionuclides, will achieve the CERCLA risk range. Final site-specific data will be used to demonstrate the documented remedy was both achieved and is protective.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
55	<p>EPA's comments to the Draft Review clearly state that the Navy's submission of the Fourth FYR Building Addendum did not satisfy its demands that the Navy update the building PRGs. EPA then explains the Navy changed the remedy. Based on a substantive change in building reuse plans and recent congressional authorization, the Navy is now preparing to demolish and dispose of all potentially radiologically impacted buildings, except two historical structures, rather than certify them for unrestricted reuse.</p> <p>Unless the Navy can demonstrate that none of the historical buildings were radiologically impacted, the PRG/RESRAD dispute remains. The Navy must update its building remedial goals as part of this Fifth FYR.</p>	<p>Commenter's factual and legal characterizations of this issue are noted. Navy disagrees with such characterizations to the extent commenter alleges that Navy has failed to act in compliance with applicable law or regulation or that such characterizations are not a complete and/or accurate characterization of the law or facts. As noted in the comment, there is congressional authorization to demolish/dismantle certain structures at HPNS. Any demolition activities undertaken by Navy at HPNS pursuant to this congressional authorization or otherwise would be undertaken in accordance with all applicable laws and regulations.</p>
56	<p>Other Deficiencies (page 12)</p> <ol style="list-style-type: none"> 1. The Navy misuses "institutional controls". ICs are insufficient to assure long-term protectiveness. 2. The Navy has never provided a realistic plan to realistically enforce the ICs continuously in the future. Implementation of ICs has been deferred until property transfer. 3. The Navy's protectiveness calculations failed to calculate total risk from the sum of all radionuclides and to sum the radiological risks with chemical risks. 4. The Navy has not properly justified its background radiation calculations, as it improperly took background samples at Shipyard sites that were likely radiologically impacted. 	<ol style="list-style-type: none"> 1. The Navy disagrees with the conclusion that ICs are insufficient to assure long-term protectiveness. ICs are selected as part of the CERCLA remedy selection process and are used when its either economically or technically impractical to removal all residual contamination. 2. See response to comment #15 3. The Navy will evaluate final risk from exposures upon completion of the remedial action to meet the project remedial goals. 4. The Navy worked with the regulatory agencies to develop its background study and disagrees with the claim that they were improperly collected.
57	<p>The Navy must not repeat its Fourth FYR violations and respond to all comments to the Draft Review.</p>	<p>Per OSWER 9355.7-03B-P, the only required community outreach activities associated with a Five-Year Review include community notice of the start of the Five-Year Review process and community notice of the completion of the Five-Year Review process.</p> <p>The Navy has prepared response to comments and provided responses to all community comments.</p>
58	<p>In the Draft Review, the Navy continues to rely on Tetra Tech data. The Navy should either excise all references to TEC data or specify what data it is citing from Tetra Tech and justify its use by demonstrating it is not tainted by fraud and/or quality assurance and quality assurance deficiencies.</p>	<p>Tetra Tech is a large company with various divisions and work from the Tetra Tech EM division or its joint ventures has not been called into question or deemed unreliable.</p>

FIFTH FIVE-YEAR REVIEW REPORT
HUNTERS POINT NAVAL SHIPYARD, SAN FRANCISCO, CALIFORNIA

APPENDIX K

No.	Public Comments Dated March, April, and May 2024	Navy Response
59	<p>The current remediation methods for multiple parcels includes capping radioactive and toxic waste along the shoreline, which will NOT remain protective when inundated and flooded by groundwater and sea level rise. Following are comments on the climate resilience assessment:</p> <ol style="list-style-type: none"> 1. The Five-Year Review must use the government’s scientific projections when planning for risks before and beyond 2065 – sea level rise, bay level rise, groundwater rise. 2. Capping contamination or using “durable” covers cannot be an acceptable form of remediation at the HPNS because of the risk associated with sea level rise, groundwater rise and inundation, and increased flooding from storms. 3. Flooding has already occurred at the HPNS and has already threatened the health and safety of the surrounding community and environment. 4. As this is a shoreline contaminated site in a heavily impacted community subject to sea level rise and groundwater rise, the entire site must be completely cleaned up to residential standards, with no contamination remaining on-site. 5. Pursue and research safe, alternative treatment technologies that do not leave toxic and radioactive waste along the shoreline. 	<p>Additional groundwater level and flow assessment will be discussed with the agencies as part of site-specific studies and communicated with the community.</p> <ol style="list-style-type: none"> 1. The CRA in the FYR uses best available science, including climate hazard projections made by prominent organizations like SERDP, FEMA, NOAA, etc. and that are consistent with guidance from regional sources like California OPC and DTSC. Methodologies used are similar to ones recommended in peer-reviewed literature or used by relevant organizations like the City of Alameda. 2. The CRA is a screening level assessment of these multiple hazards – sea level rise, groundwater rise, storms, etc. A more detailed assessment will be conducted during site-specific studies that are being discussed with the agencies. 3. The Navy will discuss more detailed evaluation of flooding with agencies, as part of the planning for site-specific studies. 4. The CRA is a first step towards assessing climate change hazards at a DoD or former DoD installation. Next steps are being discussed with the agencies, as part of site-specific studies. <p>The Navy is committed to addressing any unacceptable risk to human health or environment, using best available science and in discussion with the regulatory agencies.</p>